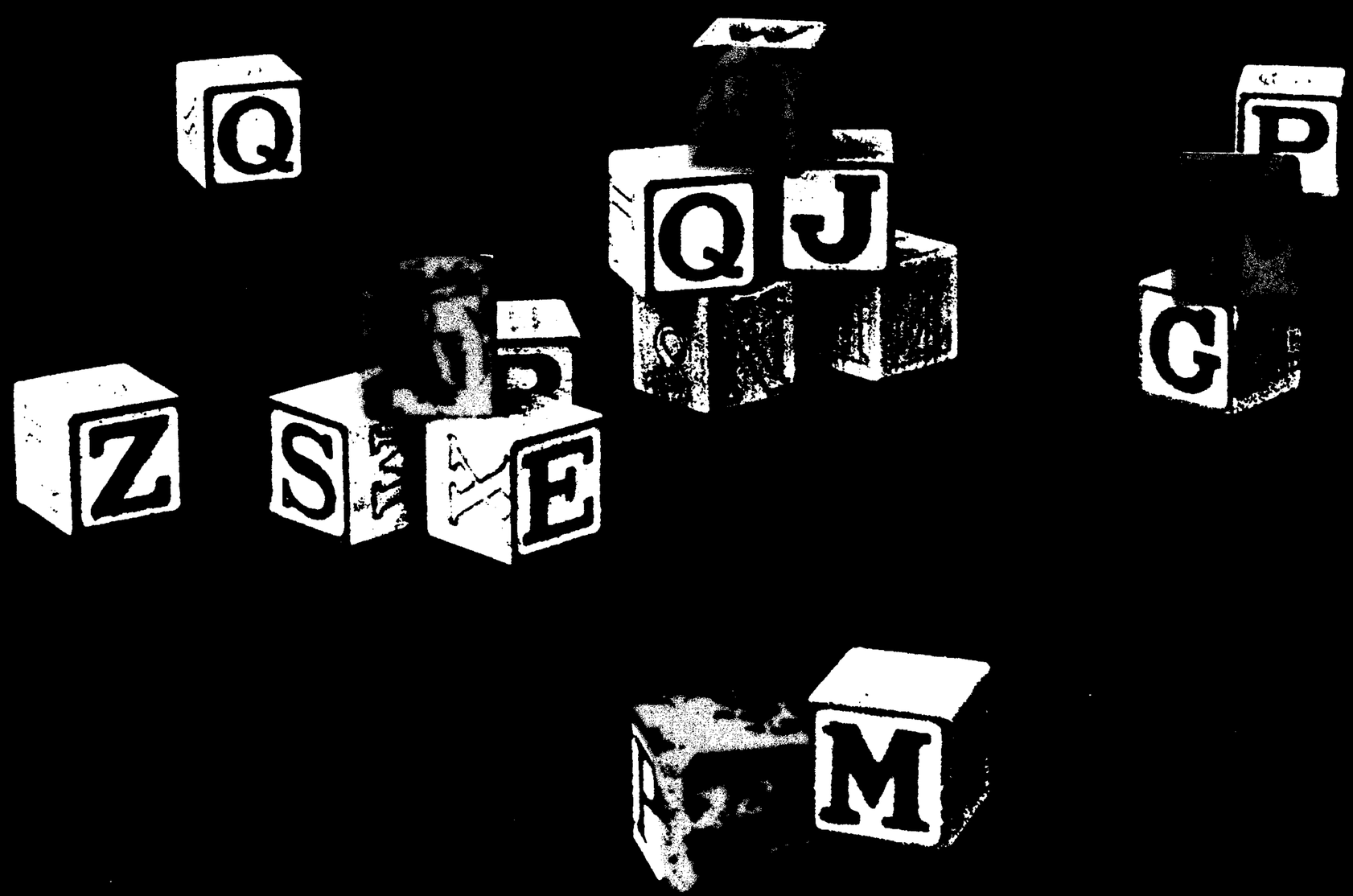
Readings in Child Psychology



Dorothy Rogers

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PREFACE

The readings in this volume are arranged according to 12 topics, roughly corresponding to the areas of child psychology treated in many textbooks. Each section is preceded by an introduction, which briefly reviews the status of research in the area and gives items of an interpretive or descriptive nature about the authors and articles, to provide human interest and a better background for appreciating the selections themselves. Following each section is a list of suggestions for additional reading.

Other merits being equal, articles have been chosen for recency. However, many less-than-current selections have been included for various reasons. Some are classics, or by way of becoming so; others have had a continuing impact on the field in serving as prototypes for later research. Certain earlier articles were deemed especially readable, effectively written, and provocative. Still others perhaps cover a topic more effectively than those of more recent date. Moreover, by reading articles spanning a number of years, the student is made aware of the ongoing nature of child psychology. In many cases, an article has been, in effect, updated through asking an author what changes he might make if he rewrote the article now.

In general, I have deliberately chosen selections that differ in approach, style, and point of view. Also, the student is exposed to a range of research approaches, theoretical frames of reference, and data that may serve as a basis for formulating his own theories.

Briefer articles are presented in their entirety; others have been abridged due to space considerations. Specific portions may have been rejected as somewhat technical or less relevant to the editor's immediate aims. However, care has been taken not to distort or unduly dilute the author's ideas in the process.

A book of readings, as an instructional tool, fulfills several needs. Textbooks provide excellent summaries, but their very comprehensiveness precludes consideration of topics in depth. Readings, by contrast, provide the raw material from which the textbook is derived. Many students lack any real contact with primary sources until graduate school. More-

over, college libraries, especially small ones, may have only a limited selection of periodicals, so that many highly important articles are unavailable. Even in larger ones, the lack of multiple volumes limits access to especially significant articles. Nevertheless, books of readings should merely be considered an adjunct to library reading, helping to establish a basis for more effective library use.

This volume is a companion to another book of readings, *Issues in Child Psychology,* by the same author and publisher. Although the books are independent, each can be used to supplement the other, thus plugging gaps in subject matter and providing reinforcement.

I would like to thank Professors Urie Bronfenbrenner of Cornell University and Gene R. Medinnus of San Jose State College for their helpful comments in the manuscript stage. I am especially grateful to Bonnie Fitzwater and Konrad Kerst, of Brooks/Cole Publishing Company, and to Betty Moody, each of whom helped immeasurably in the production of the book.

Dorothy Rogers

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READINGS IN CHILD PSYCHOLOGY

1

HEREDITY AND PRENATAL ENVIRONMENT

Steeped in the bias of the **behaviorists** and their leader John B. Watson, psychologists of the second quarter of this century assumed a strong environmentalist position which remained long unchallenged. However, in the 1950s researchers and theorists such as Beach, Hebb, Scott, and Dobzhansky began to provide new and stimulating evidence of the role of **genetics** in behavior. For example, through selective breeding different strains of the same animal were shown to manifest quite different behaviors in such areas as sex drive, maze-running ability, and mating. Fuller and Scott (1965) demonstrated that breeds of dogs differ in many characteristics, including timidity, aggressiveness, and sensitivity to noise. In learning situations, some breeds excelled in one sort of thing, others in another. Also, each breed had its typical approach to problem solving. For example, beagles made many errors at first, then rapid progress, and concluded with nonrigid, variable habits of behavior. By contrast, Shetland sheep dogs, whose ancestors had been selected for their ability to perform complex tasks under close direction from their masters, performed rather badly.

Among humans, the most fruitful research has involved comparisons of **monozygotic** or identical twins. Since the heredity of such twins is the same, demonstrated differences in their behavior may be ascribed to environment. Another approach has been the scrutiny of correlations between **traits** manifested by relatives. If a trait resemblance grows consistently less as the degree of kinship lessens, a genetic influence is assumed.

A related area of research, which will probably receive increasing attention, is that of **positive eugenics**, which is concerned with the improvement of races and breeds through the control of hereditary factors. Many persons are sensitive regarding this topic; nevertheless, the population explosion makes the discussion of some form of population control almost inevitable. Besides, social policies inevitably affect human evolution. For example, dependency allowances for each child may encourage less responsible and possibly less intelligent persons to have a disproportionately large number of children. The basic question is this: Assuming that we become more aware of these byproducts of social change, what, if anything, should be done to control the direction of evolution? The tremendous strides taken in the field of genetics also raise

*Words appearing in boldface are defined in the Glossary (at the end of the book) either in the exact form shown in the text or in the standard singular noun form. Note that Glossary terms are in boldface only at their first important occurrence in the text.

†References for the editor's citations in chapter introductions appear at the end of the book.

questions as to how the fruits of such research may best be applied. If ideas for genetic control are simply too "far out" to be tolerated, an enlightened citizenry must be prepared to protect itself from exploitation. On the other hand, it would seem unwise to reject categorically everything subsumed under the topic of eugenics simply because some, or even much, that is recommended in its name appears objectionable. Otherwise, heredity in the guise of **maturation** sneaks up throughout one's life, sometimes with unfortunate consequences which might have been forestalled by proper precautions.

In approaching the topic of eugenics, it is well to keep certain facts in mind. Conscious measures to control man's biological nature may either be "negative," calculated to prevent or cure physical and mental defects, or positive, planned to produce a higher type of individual. Strides in eugenics would seem to make considerable change possible, but just what changes are desired? What sort of person is ideal? Will recipes for human beings even be computerized? What of individual rights and liberties or ethical and religious considerations. What of the possibility of insidious political manipulation of eugenics programs? Is birth control the only alternative to programs of positive eugenics? While no readings are reproduced here that directly discuss eugenics, the interested student will find relevant references among the annotated readings that follow.

The other side of the coin is the belief that the individual is a being shaped by, and capable of shaping, his environment, rather than the helpless pawn of genetic forces. It is not possible to classify various environmental stimuli as inevitably positive or negative in effect; rather, the effect depends on the personality and current emotional status of the child. While some writers continue to portray the infant as the helpless victim of whatever stimuli impinge upon him, others perceive him as interacting reciprocally with his environment (Kessen, 1963).

Not surprisingly, many studies, especially in the 1930s, and to a diminishing extent in the 1940s, attempted to establish the relative effects of heredity and **environment**. Then in the 1950s, the prevailing view came to be one of interaction, with genetic and environmental factors perceived as functionally inseparable. In effect, the issue was declared dead, and debating it as futile as beating a dead horse. However, among themselves psychologists unquestionably assign heredity or environment a relatively greater or lesser role. The majority devote more time to environmental factors probably because social pressure and lack of technical know-how prevent manipulating the heredity of human beings. However, the role of heredity is currently receiving greater emphasis, largely because of significant research during the past two decades.

Of the articles that follow, Anne Anastasi's is fast becoming a classic, inasmuch as it is one of the most widely quoted contributions to the nature-nurture literature of recent years. Dr. Anastasi, who is Professor of Psychology at Fordham University, New York, is one of the leading investigators and writers about differential psychology—that is, the psychology of individual differences. In the accompanying selection, she reviews problems involved in determining the relative influence of heredity and environment on behavior, questioning how each influences behavior and making provocative suggestions for further study of the question.

The Kelloggs' book *The Ape and the Child,* from which a brief selection is given, is a classic in the comparative study of behavior. In this excerpt, the authors discuss research concerning feral children —that is, children brought up in the wilds apart from human company. Then they tell of bringing up a small ape in the manner of a child, in the company of their small son Donald. The Kelloggs' aim was to determine to what extent humans and animals are limited in their adaptation by the biological characteristics of their species. Overall, the study constitutes dramatic evidence of the sig-

nificance of heredity in differentiating the behavior of species. Dr. W. N. Kellogg is a research biologist and Professor Emeritus of Florida State University, and L. A. Kellogg is his wife.

A related area of research, only recently accorded any substantial recognition but fast gaining impetus, is research concerning prenatal development. Most available data have come from animal research or from human fetuses delivered prematurely. Unfortunately, such fetuses usually die very shortly; besides, the same abnormal conditions that caused the fetus to be removed, either through operation or abortion, limit its contribution to the understanding of normal behavior. Nevertheless, much is being learned about this period, which is increasingly recognized as critical for later development. Recent studies, for example, the study by Graham and associates (1962), suggest that we have underestimated the number of children's behavior problems that are actually the neurological results of prenatal and **perinatal** complications. There is evidence that adverse behavioral effects may stem from apparently mild neurological damage.

The selection by Frank A. Beach provides an interesting glimpse into prenatal research. Dr. Beach, Professor of Psychology at the University of California at Berkeley, clarifies certain principles of prenatal development and concludes there is no fundamental discontinuity between pre- and postnatal existence—that the same processes and principles apply to both periods. He employs an example from embryology, which also illustrates the concept of critical period.

HEREDITY, ENVIRONMENT, AND THE QUESTION "HOW?"

ANNE ANASTASI

Two or three decades ago, the so-called heredity-environment question was the center of lively controversy. Today, on the other hand, many psychologists look upon it as a dead issue. It is now generally conceded that both hereditary and environmental factors enter into all behavior. The reacting organism is a product of its **genes** and its past **environment**, while present environment provides the immediate stimulus for current behavior. To be sure, it can be argued that, although a given trait may result from the combined influence of hereditary and environmental factors, a specific difference in this trait between individuals or between groups may be traceable to either hereditary or environmental factors alone. The design of most traditional investigations undertaken to identify such factors, however, has been such as to yield inconclusive answers. The same set of data has frequently led to opposite conclusions in the hands of psychologists with different orientations.

Nor have efforts to determine the proportional contribution of hereditary and environmental factors to observed individual differences in given traits met with any greater success. Apart from difficulties in controlling conditions, such investigations have usually been based upon the implicit assumption that hereditary and environmental factors combine in an additive fashion. Both geneticists and psychologists have repeatedly demonstrated, however, that a more tenable hypothesis is that of interaction (15, 22, 28, 40). In other words, the nature and extent of the

From Anne Anastasi, "Heredity, Environment, and the Question 'How?'" *Psychological Review*, Vol. 65 (1958), pp. 197–208. Reprinted by permission of the author and the American Psychological Association.

influence of each type of factor depend upon the contribution of the other. Thus the proportional contribution of **heredity** to the variance of a given trait, rather than being a constant, will vary under different environmental conditions. Similarly, under different hereditary conditions, the relative contribution of environment will differ. Studies designed to estimate the proportional contribution of heredity and environment, however, have rarely included measures of such interaction. The only possible conclusion from such research would thus seem to be that both heredity and environment contribute to all behavior traits and that the extent of their respective contributions cannot be specified for any trait. Small wonder that some psychologists regard the heredity-environment question as unworthy of further consideration!

But is this really all we can find out about the operation of heredity and environment in the etiology of behavior? Perhaps we have simply been asking the wrong questions. The traditional questions about heredity and environment may be intrinsically unanswerable. Psychologists began by asking *which* type of factor, hereditary or environmental, is responsible for individual differences in a given trait. Later, they tried to discover *how much* of the variance was attributable to heredity and how much to environment. It is the primary contention of this paper that a more fruitful approach is to be found in the question *"How?"* There is still much to be learned about the specific *modus operandi* of hereditary and environmental factors in the development of behavioral differences. And there are several current lines of research which offer promising techniques for answering the question "How?"

Variety of Interaction Mechanisms

Hereditary Factors

If we examine some of the specific ways in which hereditary factors may influence behavior, we cannot fail but be impressed by their wide diversity. At one extreme, we find such conditions as phenylpyruvic amentia and amaurotic idiocy. In these cases, certain essential physical prerequisites for normal intellectual development are lacking as a result of hereditary metabolic disorders. . . . The individual will be mentally defective, regardless of the type of environmental conditions under which he is reared.

A somewhat different situation is illustrated by hereditary deafness, which may lead to intellectual retardation through interference with normal social interaction, language development, and schooling. In such a case, however, the hereditary handicap can be offset by appropriate adaptations of training procedures. It has been said, in fact, that the degree of intellectual backwardness of the deaf is an index of the state of development of special instructional facilities. As the latter improve, the intellectual retardation associated with deafness is correspondingly reduced.

A third example is provided by inherited susceptibility to certain physical diseases, with consequent protracted ill health. If environmental conditions are such that illness does in fact develop, a number of different behavioral effects may follow. Intellectually, the individual may be handicapped by his inability to attend school regularly. On the other hand, depending upon age of onset, home conditions, parental status, and similar factors, poor health may have the effect of concentrating the individual's energies upon intellectual pursuits. The curtailment of participation in athletics and social functions may serve to strengthen interest in reading and other sedentary activities. Concomitant circumstances would also determine the influence of such illness upon personality development. And it is well known that the latter effects could run the gamut from a deepening of human sympathy to psychiatric breakdown.

Finally, heredity may influence behavior through the mechanism of social stereotypes. A wide variety of inherited physical characteristics have served as the visible cues for identifying such stereo-

types. These cues thus lead to behavioral restrictions or opportunities and—at a more subtle level—to social attitudes and expectancies. The individual's own self concept tends gradually to reflect such expectancies. All of these influences eventually leave their mark upon his abilities and inabilities, his emotional reactions, goals, ambitions, and outlook on life.

The geneticist Dobzhansky illustrates this type of mechanism by means of a dramatic hypothetical situation. He points out that, if there were a culture in which the carriers of blood group AB were considered aristocrats and those of blood group O laborers, then the blood-group genes would become important hereditary determiners of behavior (12, p. 147). Obviously the association between blood group and behavior would be specific to that culture. But such specificity is an essential property of the causal mechanism under consideration.

More realistic examples are not hard to find. The most familiar instances occur in connection with constitutional types, sex, and race. Sex and skin pigmentation obviously depend upon heredity. General body build is strongly influenced by hereditary components, although also susceptible to environmental modification. That all these physical characteristics may exert a pronounced effect upon behavior within a given culture is well known. It is equally apparent, of course, that in different cultures the behavioral correlates of such hereditary physical traits may be quite unlike. A specific physical cue may be completely unrelated to individual differences in psychological traits in one culture, while closely correlated with them in another. Or it may be associated with totally dissimilar behavior characteristics in two different cultures.

It might be objected that some of the illustrations which have been cited do not properly exemplify the operation of hereditary mechanisms in behavior development, since hereditary factors enter only indirectly into the behavior in question. Closer examination, however, shows this distinction to be untenable. First it may be noted that the influence of heredity upon behavior is always indirect. No psychological trait is ever inherited as such. All we can ever say directly from behavioral observations is that a given trait shows evidence of being influenced by certain "inheritable unknowns." This merely defines a problem for genetic research; it does not provide a causal explanation. Unlike the blood groups, which are close to the level of primary gene products, psychological traits are related to genes by highly indirect and devious routes. Even the **mental deficiency** associated with **phenylketonuria** is several steps removed from the chemically defective genes that represent its hereditary basis. Moreover, hereditary influences cannot be dichotomized into the more direct and the less direct. Rather do they represent a whole "continuum of indirectness," along which are found all degrees of remoteness of causal links. The examples already cited illustrate a few of the points on this continuum.

Heredity, environment, and the question "how?"

It should be noted that as we proceed along the continuum of indirectness, the range of variation of possible outcomes of hereditary factors expands rapidly. At each step in the causal chain, there is fresh opportunity for interaction with other hereditary factors as well as with environmental factors. And since each interaction in turn determines the direction of subsequent interactions, there is an ever-widening network of possible outcomes. If we visualize a simple sequential grid with only two alternatives at each point, it is obvious that there are two possible outcomes in the one-stage situation, four outcomes at the second stage, eight at the third, and so on in geometric progression. The actual situation is undoubtedly much more complex, since there will usually be more than two alternatives at any one point.

In the case of the blood groups, the relation to specific genes is so close that no other concomitant hereditary or environmental conditions can alter the outcome. If the organism survives at all, it will have the blood group determined by

its genes. Among psychological traits, on the other hand, some variation in outcome is always possible as a result of concurrent circumstances. Even in cases of phenylketonuria, intellectual development will exhibit some relationship with the type of care and training available to the individual. That behavioral outcomes show progressive diversification as we proceed along the continuum of indirectness is brought out by the other examples which were cited. Chronic illness *can* lead to scholarly renown or to intellectual immaturity; a **mesomorphic** physique *can* be a contributing factor in juvenile delinquency or in the attainment of a college presidency! Published data on Sheldon **somatotypes** provide some support for both of the latter outcomes.

Parenthetically, it may be noted that geneticists have sometimes used the term "norm of reaction" to designate the range of variation of possible outcomes of gene properties (cf. 13, p. 161). Thus heredity sets the "norm" or limits within which environmental differences determine the eventual outcome. In the case of some traits, such as blood groups or eye color, this norm is much narrower than in the case of other traits. Owing to the rather different psychological connotations of both the words "norm" and "reaction," however, it seems less confusing to speak of the "range of variation" in this context.

A large portion of the continuum of hereditary influences which we have described coincides with the domain of somatopsychological relations, as defined by Barker et al. (6). Under this heading, Barker includes "variations in physique that affect the psychological situation of a person by influencing the effectiveness of his body as a tool for actions or by serving as a stimulus to himself or others" (6, p. 1). Relatively direct neurological influences on behavior, which have been the traditional concern of physiological psychology, are excluded from this definition, Barker being primarily concerned with what he calls the "social psychology of physique." Of the examples cited in the present paper, deafness, severe illness, and the physical characteristics associated with social stereotypes would meet the specifications of **somatopsychological** factors.

The somatic factors to which Barker refers, however, are not limited to those of hereditary origin. Bodily conditions attributable to environmental causes operate in the same sorts of somatopsychological relations as those traceable to heredity. In fact, heredity-environment distinctions play a minor part in Barker's approach.

Environmental Factors: Organic

Turning now to an analysis of the role of environmental factors in behavior, we find the same etiological mechanisms which were observed in the case of hereditary factors. First, however, we must differentiate between two classes of environmental influences: (*a*) those producing organic effects which may in turn influence behavior and (*b*) those serving as direct stimuli for psychological reactions. The former may be illustrated by food intake or by exposure to bacterial infection; the latter, by tribal initiation ceremonies or by a course in algebra. There are no completely satisfactory names by which to designate these two classes of influences. In an earlier paper by Anastasi and Foley (4), the terms "structural" and "functional" were employed. However, "organic" and "behavioral" have the advantage of greater familiarity in this context and may be less open to misinterpretation. Accordingly, these terms will be used in the present paper.

Like hereditary factors, environmental influences of an organic nature can also be ordered along a continuum of indirectness with regard to their relation to behavior. This continuum closely parallels that of hereditary factors. One end is typified by such conditions as mental deficiency resulting from cerebral birth injury or from prenatal nutritional inadequacies. A more indirect etiological mechanism is illustrated by severe motor disorder—as in certain cases of cerebral

palsy—*without* accompanying injury to higher neurological centers. In such instances, intellectual retardation may occur as an indirect result of the motor handicap, through the curtailment of educational and social activities. Obviously this causal mechanism corresponds closely to that of hereditary deafness cited earlier in the paper.

Finally, we may consider an environmental parallel to the previously discussed social stereotypes which were mediated by hereditary physical cues. Let us suppose that a young woman with mousy brown hair becomes transformed into a dazzling golden blonde through environmental techniques currently available in our culture. It is highly probable that this metamorphosis will alter, not only the reactions of her associates toward her, but also her own self concept and subsequent behavior. The effects could range all the way from a rise in social poise to a drop in clerical accuracy!

Among the examples of environmentally determined organic influences which have been described, all but the first two fit Barker's definition of somatopsychological factors. With the exception of birth injuries and nutritional deficiencies, all fall within the social psychology of physique. Nevertheless, the individual factors exhibit wide diversity in their specific *modus operandi*—a diversity which has important practical as well as theoretical implications.

Environmental Factors: Behavioral

The second major class of environmental factors—the behavioral as contrasted to the organic—are by definition direct influences. The immediate effect of such environmental factors is always a behavioral change. To be sure, some of the initial behavioral effects may themselves indirectly affect the individual's later behavior. But this relationship can perhaps be best conceptualized in terms of breadth and permanence of effects. Thus it could be said that we are now dealing not with a continuum of indirectness, as in the case of hereditary and organic-environmental factors, but rather with a continuum of breadth.

Heredity, environment, and the question "how?"

Social class membership may serve as an illustration of a relatively broad, pervasive, and enduring environmental factor. Its influence upon behavior development may operate through many channels. Thus social level may determine the range and nature of intellectual stimulation provided by home and community through books, music, art, play activities, and the like. Even more far-reaching may be the effects upon interests and motivation, as illustrated by the desire to perform abstract intellectual tasks, to surpass others in competitive situations, to succeed in school, or to gain social approval. Emotional and social traits may likewise be influenced by the nature of interpersonal relations characterizing homes at different socioeconomic levels. Somewhat more restricted in scope than social class, although still exerting a relatively broad influence, is amount of formal schooling which the individual is able to obtain.

A factor which may be wide or narrow in its effects, depending upon concomitant circumstances, is language handicap. Thus the bilingualism of an adult who moves to a foreign country with inadequate mastery of the new language represents a relatively limited handicap which can be readily overcome in most cases. At most, the difficulty is one of communication. On the other hand, some kinds of bilingualism in childhood may exert a retarding influence upon intellectual development and may under certain conditions affect personality development adversely (2, 5, 10). A common pattern in the homes of immigrants is that the child speaks one language at home and another in school, so that his knowledge of each language is limited to certain types of situations. Inadequate facility with the language of the school interferes with the acquisition of basic concepts, intellectual skills, and information. The frustration engendered by scholastic difficulties may in turn lead to discouragement and general dislike of school. Such reactions can be found, for example, among a number

of Puerto Rican children in New York City schools (3). In the case of certain groups, moreover, the child's foreign language background may be perceived by himself and his associates as a symbol of minority group status and may thereby augment any emotional maladjustment arising from such status (34).

A highly restricted environmental influence is to be found in the opportunity to acquire specific items of information occurring in a particular intelligence test. The fact that such opportunities may vary with culture, social class, or individual experiential background is at the basis of the test user's concern with the problem of coaching and with "culture-free" or "culture-fair" tests (cf. 1, 2). If the advantage or disadvantage which such experiential differences confer upon certain individuals is strictly confined to performance on the given test, it will obviously reduce the validity of the test and should be eliminated.

In this connection, however, it is essential to know the breadth of the environmental influence in question. A fallacy inherent in many attempts to develop culture-fair tests is that the breadth of cultural differentials is not taken into account. Failure to consider breadth of effect likewise characterizes certain discussions of coaching. If, in coaching a student for a college admission test, we can improve his knowledge of verbal concepts and his reading comprehension, he will be better equipped to succeed in college courses. His performance level will thus be raised, not only on the test, but also on the criterion which the test is intended to predict. To try to devise a test which is not susceptible to such coaching would merely reduce the effectiveness of the test. Similarly, efforts to rule out cultural differentials from test items so as to make them equally "fair" to subjects in different social classes or in different cultures may merely limit the usefulness of the test, since the same cultural differentials may operate within the broader area of behavior which the test is designed to sample.

Methodological Approaches

The examples considered so far should suffice to highlight the wide variety of ways in which hereditary and environmental factors may interact in the course of behavior development. There is clearly a need for identifying explicitly the etiological mechanism whereby any given hereditary or environmental condition ultimately leads to a behavioral characteristic—in other words, the "how" of heredity and environment. Accordingly, we may now take a quick look at some promising methodological approaches to the question "how."

Within the past decade, an increasing number of studies have been designed to trace the connection between specific factors in the hereditary backgrounds or in the reactional biographies of individuals and their observed behavioral characteristics. There has been a definite shift away from the predominantly descriptive and correlational approach of the earlier decades toward more deliberate attempts to verify explanatory hypotheses. Similarly, the cataloguing of group differences in psychological traits has been giving way gradually to research on *changes* in group characteristics following altered conditions.

Among recent methodological developments, we have chosen seven as being particularly relevant to the analysis of etiological mechanisms. The first represents an extension of selective breeding investigations to permit the identification of specific hereditary conditions underlying the observed behavioral differences. When early selective breeding investigations such as those of Tryon (36) on rats indicated that "maze learning ability" was inherited, we were still a long way from knowing what was actually being transmitted by the genes. It was obviously not "maze learning ability" as such. Twenty—or even ten—years ago, some psychologists would have suggested that it was probably general intelligence. And a few might even have drawn a parallel with the inheritance of human intelligence.

But today investigators have been

asking: Just what makes one group of rats learn mazes more quickly than the other? Is it differences in motivation, emotionality, speed of running, general activity level? If so, are these behavioral characteristics in turn dependent upon group differences in glandular development, body weight, brain size, biochemical factors, or some other organic conditions? A number of recent and ongoing investigations indicate that attempts are being made to trace, at least part of the way, the steps whereby certain chemical properties of the genes may ultimately lead to specified behavior characteristics.

An example of such a study is provided by Searle's (31) follow-up of Tryon's research. Working with the strains of maze-bright and maze-dull rats developed by Tryon, Searle demonstrated that the two strains differed in a number of emotional and motivational factors, rather than in ability. Thus the strain differences were traced one step further, although many links still remain to be found between maze learning and genes. A promising methodological development within the same general area is to be found in the recent research of Hirsch and Tryon (18). Utilizing a specially devised technique for measuring individual differences in behavior among lower organisms, these investigators launched a series of studies on selective breeding for behavioral characteristics in the fruit fly, *Drosophila*. Such research can capitalize on the mass of available genetic knowledge regarding the morphology of *Drosophila,* as well as on other advantages of using such an organism in genetic studies.

Further evidence of current interest in the specific hereditary factors which influence behavior is to be found in an extensive research program in progress at the Jackson Memorial Laboratory, under the direction of Scott and Fuller (30). In general, the project is concerned with the behavioral characteristics of various breeds and cross-breeds of dogs. Analyses of some of the data gathered to date again suggest that "differences in performance are produced by differences in emotional, motivational, and peripheral processes, and that genetically caused differences in central processes may be either slight or non-existent" (29, p. 225). In other parts of the same project, breed differences in physiological characteristics, which may in turn be related to behavioral differences, have been established.

Heredity, environment, and the question "how?"

A second line of attack is the exploration of possible relationships between behavioral characteristics and physiological variables which may in turn be traceable to hereditary factors. Research on EEG, autonomic balance, metabolic processes, and biochemical factors illustrates this approach. A lucid demonstration of the process of tracing a psychological condition to genetic factors is provided by the identification and subsequent investigation of phenylpyruvic amentia. In this case, the causal chain from defective gene, through metabolic disorder and consequent cerebral malfunctioning, to feeblemindedness and other overt symptoms can be described step by step (cf. 32; 33, pp. 389–391). Also relevant are the recent researches on neurological and biochemical correlates of schizophrenia (9). Owing to inadequate methodological controls, however, most of the findings of the latter studies must be regarded as tentative (19).

Prenatal environmental factors provide a third avenue of fruitful investigation. Especially noteworthy is the recent work of Pasamanick and his associates (27), which demonstrated a tie-up between socioeconomic level, complications of pregnancy and parturition, and psychological disorders of the offspring. In a series of studies on large samples of whites and Negroes in Baltimore, these investigators showed that various prenatal and paranatal disorders are significantly related to the occurrence of mental defect and psychiatric disorders in the child. An important source of such irregularities in the process of childbearing and birth is to be found in deficiencies of maternal diet and in other conditions associated with low socioeconomic status.

An analysis of the data did in fact reveal a much higher frequency of all such medical complications in lower than in higher socioeconomic levels, and a higher frequency among Negroes than among whites.

Direct evidence of the influence of prenatal nutritional factors upon subsequent intellectual development is to be found in a recent, well controlled experiment by Harrell et al. (16). The subjects were pregnant women in low-income groups, whose normal diets were generally quite deficient. A dietary supplement was administered to some of these women during pregnancy and lactation, while an equated control group received placebos. When tested at the ages of three and four years, the offspring of the experimental group obtained a significantly higher mean IQ than did the offspring of the controls.

Mention should also be made of animal experiments on the effects of such factors as prenatal radiation and neonatal asphyxia upon cerebral anomalies as well as upon subsequent behavior development. These experimental studies merge imperceptibly into the fourth approach to be considered, namely, the investigation of the influence of early experience upon the eventual behavioral characteristics of animals. Research in this area has been accumulating at a rapid rate. In 1954, Beach and Jaynes (8) surveyed this literature for the *Psychological Bulletin,* listing over 130 references. Several new studies have appeared since that date (e.g., 14, 21, 24, 25, 35). The variety of factors covered ranges from the type and quantity of available food to the extent of contact with human culture. A large number of experiments have been concerned with various forms of sensory deprivation and with diminished opportunities for motor exercise. Effects have been observed in many kinds of animals and in almost all aspects of behavior, including perceptual responses, motor activity, learning, emotionality, and social reactions.

In their review, Beach and Jaynes pointed out that research in this area has been stimulated by at least four distinct theoretical interests. Some studies were motivated by the traditional concern with the relative contribution of maturation and learning to behavior development. Others were designed in an effort to test certain psychoanalytic theories regarding infantile experiences, as illustrated by studies which limited the feeding responses of young animals. A third relevant influence is to be found in the work of the European biologist Lorenz (23) on early social stimulation of birds, and in particular on the special type of learning for which the term **"imprinting"** has been coined. A relatively large number of recent studies have centered around Hebb's (17) theory regarding the importance of early perceptual experiences upon subsequent performance in learning situations. All this research represents a rapidly growing and promising attack on the *modus operandi* of specific environmental factors.

The human counterpart of these animal studies may be found in the comparative investigation of child-rearing practices in different cultures and subcultures. This represents the fifth approach in our list. An outstanding example of such a study is that by Whiting and Child (38), published in 1953. Utilizing data on 75 primitive societies from the Cross-Cultural Files of the Yale Institute of Human Relations, these investigators set out to test a number of hypotheses regarding the relationships between child-rearing practices and personality development. This analysis was followed up by field observations in five cultures, the results of which have not yet been reported (cf. 37).

Within our own culture, similar surveys have been concerned with the diverse psychological environments provided by different social classes (11). Of particular interest are the study by Williams and Scott (39) on the association between socioeconomic level, permissiveness, and motor development among Negro children, and the exploratory research by

Milner (26) on the relationship between reading readiness in first-grade children and patterns of parent-child interaction. Milner found that upon school entrance the lower-class child seems to lack chiefly two advantages enjoyed by the middle-class child. The first is described as "a warm positive family atmosphere or adult-relationship pattern which is more and more being recognized as a motivational prerequisite of any kind of adult-controlled learning." The lower-class children in Milner's study perceived adults as predominantly hostile. The second advantage is an extensive opportunity to interact verbally with adults in the family. The latter point is illustrated by parental attitudes toward mealtime conversation, lower-class parents tending to inhibit and discourage such conversation, while middle-class parents encourage it.

Most traditional studies on child-rearing practices have been designed in terms of a psychoanalytic orientation. There is need for more data pertaining to other types of hypotheses. Findings such as those of Milner on opportunities for verbalization and the resulting effects upon reading readiness represent a step in this direction. Another possible source of future data is the application of the intensive observational techniques of psychological ecology developed by Barker and Wright (7) to widely diverse socioeconomic groups.

A sixth major approach involves research on the previously cited somato-psychological relationships (6). To date, little direct information is available on the precise operation of this class of factors in psychological development. The multiplicity of ways in which physical traits—whether hereditary or environmental in origin—may influence behavior thus offers a relatively unexplored field for future study.

The seventh and final approach to be considered represents an adaptation of traditional twin studies. From the standpoint of the question "How?" there is need for closer coordination between the usual data on twin resemblance and observations of the family interactions of twins. Available data already suggest, for example, that closeness of contact and extent of environmental similarity are greater in the case of **monozygotic** than in the case of **dizygotic twins** (cf. 2). Information on the social reactions of twins toward each other and the specialization of roles is likewise of interest (2). Especially useful would be longitudinal studies of twins, beginning in early infancy and following the subjects through school age. The operation of differential environmental pressures, the development of specialized roles, and other environmental influences could thus be more clearly identified and correlated with intellectual and personality changes in the growing twins.

Heredity, environment, and the question "how?"

Parenthetically, I should like to add a remark about the traditional applications of the twin method, in which persons in different degrees of hereditary and environmental relationships to each other are simply compared for behavioral similarity. In these studies, attention has been focused principally upon the amount of resemblance of **monozygotic** as contrasted to **dizygotic twins**. Yet such a comparison is particularly difficult to interpret because of the many subtle differences in the environmental situations of the two types of twins. A more fruitful comparison would seem to be that between dizygotic twins and siblings, for whom the hereditary similarity is known to be the same. In Kallmann's monumental research on psychiatric disorders among twins (20), for example, one of the most convincing bits of evidence for the operation of hereditary factors in schizophrenia is the fact that the degrees of concordance for dizygotic twins and for siblings were practically identical. In contrast, it will be recalled that in intelligence test scores dizygotic twins resemble each other much more closely than do siblings—a finding which reveals the influence of environmental factors in intellectual development.

Summary

The heredity-environment problem is still very much alive. Its viability is assured by the gradual replacement of the questions, "Which one?" and "How much?" by the more basic and appropriate question, "How?" Hereditary influences—as well as environmental factors of an **organic** nature—vary along a "continuum of indirectness." The more indirect their connection with behavior, the wider will be the range of variation of possible outcomes. One extreme of the continuum of indirectness may be illustrated by brain damage leading to mental deficiency; the other extreme, by physical characteristics associated with social stereotypes. Examples of factors falling at intermediate points include deafness, physical diseases, and motor disorders. Those environmental factors which act directly upon behavior can be ordered along a continuum of breadth or permanence of effect, as exemplified by social class membership, amount of formal schooling, language handicap, and familiarity with specific test items.

Several current lines of research offer promising techniques for exploring the *modus operandi* of hereditary and environmental factors. Outstanding among them are investigations of: (*a*) hereditary conditions which underlie behavioral differences between selectively bred groups of animals; (*b*) relations between physiological variables and individual differences in behavior, especially in the case of pathological deviations; (*c*) role of prenatal physiological factors in behavior development; (*d*) influence of early experience upon eventual behavioral characteristics; (*e*) cultural differences in child-rearing practices in relation to intellectual and emotional development; (*f*) mechanisms of somatopsychological relationships; and (*g*) psychological development of twins from infancy to maturity, together with observations of their social environment. Such approaches are extremely varied with regard to subjects employed, nature of psychological functions studied, and specific experimental procedures followed. But it is just such heterogeneity of methodology that is demanded by the wide diversity of ways in which hereditary and environmental factors interact in behavior development.

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Chapter one

THE APE AND THE CHILD

W. N. KELLOGG AND L. A. KELLOGG

Let us suppose that by some queer accident a human infant, the child of civilized parents, were abandoned in the woods or jungle where it had as companions only wild animals. Suppose, further, that by some miraculous combination of circumstances it did not die, but survived babyhood and early childhood and grew up in these surroundings. What would be the nature of the resulting individual who had matured under such unusual conditions, without clothing, without human language, and without association with others of its kind? That this is not so fanciful a conception as to lie altogether outside the realm of possibility is attested by the fact that about a dozen instances of "wild" foundlings of this sort are known to history. To be sure the reports about them are in many cases so garbled and distorted that the true facts are hard to sift out. In some, however, the accuracy of the accounts is well established.

One of the earliest of these children to attract scientific notice was "the wild boy of Aveyron" who was found roaming a French forest by a group of sportsmen in the year 1799. He had apparently been living on roots, berries, and such other provender as might be found in the woods. When discovered he was naked, scarred, and unkempt, and sought to resist capture by hurriedly climbing into a tree. Although he appeared to be fully 11 or 12 years old, he was quite unable to talk and was without knowledge of the most rudimentary habits of personal cleanliness. He was taken to Paris and subjected to a long period of methodical and painstaking education by a young French doctor named Itard. Despite the fact that considerable progress was made toward fitting him for the complexities of civilized life, the training on the whole was regarded as unsuccessful.

The customary way of explaining the fact that a human being of this sort does not respond well to the efforts of those who would civilize and educate it, is to say that it is feeble-minded, that it is mentally deficient, or that it is congenitally lacking in the ability to learn and adapt to its new surroundings. Even had such children lived under civilized conditions, they would still have failed to duplicate the accomplishments of normal individuals. The opportunities enjoyed by the average child would have left them little better in their ability to react than they were when they were found. This reasoning carries with it the assumption that because these children were not up to the average for their ages when their reeducation was discontinued, there must have been something wrong with them before they were placed in the jungle or prison surroundings. That they were unable to adapt completely to civilizing influences is taken as proof of an original deficiency. In fact, going one step further, it is often argued that the "wild" children were probably abandoned in the first place because they displayed idiotic or imbecilic tendencies at a very young age. Their unusual environment in this sense is a sort of result rather than the cause of their condition. The cause is ultimately a matter of hereditary deficiency—a basic lack in the genes of the parent cells.

But there is a second way of accounting for the behavior of the "wild" children, according to the theory of external or environmental influences. It would be quite possible according to the latter view to take the child of criminal delinquents, provided he was normal at birth, and by giving him the proper training, to make him a great religious or

Abridged from *The Ape and the Child* (New York: McGraw-Hill Book Co., 1933), pp. 3–7; 11–13; 16–17; 131; 311–316; 323–327. Reprinted by permission of the publisher.

moral leader. Conversely it would be possible to take the child of gifted and upright parents and by placing him in a suitable environment, to produce a criminal of the lowest order. Heredity, in this view, assumes a secondary role and education or training becomes the important item.

Instead of supposing that the "wild" children were inherently feeble-minded, as is usually done, the proponent of the environmental doctrine would hold that originally such children were probably normal. He would point, no doubt, to the fact that a child who is deficient in any respect whatever would have a smaller chance of survival in a jungle environment than one with normal abilities. On the strength of this supposition, it might be maintained that the "wild" children had made natural and adequate adjustments to their environment. They could even be said to have developed responses which were peculiarly suited to their immediate needs. Those placed with animals may actually have learned, in a literal sense of the word, to be wild themselves, in the same way that a Caucasian child reared among Chinese grows into the Chinese customs and language, or a baby that has been kidnaped by gypsies knows in later years only the gypsy manner of living.

Without doubt, one of the most significant tests which could be applied to a problem of this nature would be to put to rigid experimental proof the stories of the "wild" children themselves. To accomplish this end it would be necessary to place a normal human infant in uncivilized surroundings and to observe and record its development *as it grew up* in this environment. Such an experiment should throw important light upon the precise influence of outside stimulation in the development of the young baby. Yet obviously, in spite of all the scientific zeal which could be brought to bear upon an undertaking of this kind, it would be both legally dangerous and morally outrageous to carry out.

Although it would be impossible, therefore, to duplicate the conditions under which these foundlings are reported to have been discovered, it would be both possible and practical, it occurred to us, to reverse these conditions. Instead of placing a child in a typical animal environment, why not place an animal in a typical human environment? Why not give one of the higher primates exactly the environmental advantages which a young child enjoys and then study the development of the resulting organism? This plan is in fact similar to that suggested by Professor Lightner Witmer, who wrote in 1909:

The ape and the child

> I venture to predict that within a few years chimpanzees will be taken early in life and subjected for purposes of scientific investigation to a course of procedure more closely resembling that which is accorded the human child.

If such an experiment were to produce valid results, it would admit of no halfway measures. To carry it out in any comprehensive manner one would have to obtain an infant anthropoid ape, as young as possible, and rear it in every respect as a child is reared—even to the most minute detail. According to our plan, the animal subject was to be fed upon a bottle, clothed, bathed, fondled, and given careful human treatment in every phase of its daily existence. It would be placed in a perambulator and wheeled. It would be induced at the proper time to walk upright as the human child is assisted in this process. It would learn to eat with a spoon as soon as it was able to eat at all by itself. Throughout its upbringing its mistakes would be gently and persistently corrected as are the mistakes of a child. It would be made a thoroughly humanized member of the family of the experimenters, who would serve respectively in the capacities of adopted "father" and "mother." Many of the highly developed customs of our society might thus become integral parts of its behavior equipment in much the same manner that they are built into the human baby. As far as its immediate surroundings were

concerned, the animal would never be given the opportunity to learn any other ways of acting except the human ways.

One important consideration upon which we would insist was that the *psychological* as well as the *physical* features of the environment be entirely of a human character. That is, the reactions of all those who came in contact with the subject, and the resulting stimulation which these reactions afforded the subject, should be without exception just such as a normal child might receive. Instances of anthropoid apes which have lived in human households are of course by no means unknown. But in all the cases of which we have any knowledge the "human" treatment accorded the animals was definitely limited by the attitude of the owner and by the degree of his willingness to be put to boundless labor. It is not unreasonable to suppose, if an organism of this kind is kept in a cage for a part of each day or night, if it is led about by means of a collar and a chain, or if it is fed from a plate upon the floor, that these things must surely develop responses which are different from those of a human. A child itself, if similarly treated, would most certainly acquire some genuinely *un*childlike reactions. Again, if the organism is talked to and called like a dog or a cat, if it is consistently petted or scratched behind the ears as these animals are often treated, or if in other ways it is given *pet stimuli* instead of *child stimuli,* the resulting behavior may be expected to show the effects of such stimulation.

Having outlined the project, we may now pass to a brief statement of its consummation. On June 26, 1931, a young female chimpanzee in the colony of the Anthropoid Experiment Station of Yale University at Orange Park, Florida, was forcibly separated from her mother, in whose cage she had previously been living. This little animal, named Gua, had been born in captivity in the Abreu Colony in Cuba on November 15, 1930. She was turned over to the writers following the separation and was soon thereafter taken to their home, where her humanizing was begun. Her age at that time was 7½ months, or almost exactly 2½ months less than that of the writers' only child, Donald, who had been born August 31, 1930. From the point of view of experimental technique, the close correspondence between the ages of the boy and the ape proved indeed to be a fortunate coincidence.

These two individuals lived together as companions, playmates, and members of the same household until March 28, 1932. Their surroundings and treatment were as nearly alike as it was possible to make them. At that time, 9 months after the initiation of the research, Gua had attained the age of 16½ months, while Donald was 19 months old. The experiment was then discontinued and the ape was returned by a gradual habituating process to the more restricted life of the Experiment Station. During the nine months a continuous series of tests, comparisons, observations, and experiments were made upon the two subjects. These covered nearly every phase of their structure and behavior for which we had or could construct measuring facilities. Many of the tests unfortunately were of a crude and inaccurate nature; others were more precise.

Conclusions

Differences Favorable to the Child

We turn first to some important differences between the two individuals and consider the performances in which Gua remains upon another level from the boy. A difference "favorable" to Donald is not necessarily one in which he shows any special aptitude, nor is it one in which Gua is necessarily deficient or inferior. Only as the ape does not duplicate the performance of a human being is the resulting difference considered under this category. The items listed here represent therefore the principal ways in which the chimpanzee deviates in one way or another from human norms or standards.

Within this larger class of differences we may then make a secondary grouping

according to our predetermined plan, into (1) those responses which would probably have developed as they did even though Gua had been kept in a thoroughly non-human environment, (2) those which seem to us to be more directly dependent upon the specific nature of the civilized surroundings, and (3) those which are doubtful. But even though we make such a division to the best of our ability, it is too much to expect that all who read this passage will agree with the writers in the placing of every item. An endeavor such as this leaves room for individual opinion. Still, the results of our efforts should not conflict by too wide a margin with the judgment of others who might undertake the same task.

Non-environmental Differences. The first clearcut differences in behavior to be noted as we skim over the early findings consist of Gua's higher blood pressure and her lower pulse rate. In this grouping also should come her greater consumption of water, which is due no doubt to her probably possessing fewer sweat glands than the child. That Gua's mouth is more mobile as an organ of prehension is likewise independent of the civilized environment. It is the same with her more consistent avoidance of bright lights, her (apparently) keener hearing, and her many distinctive emotional reactions. Similarly we should place her greater propensity to bite and chew, her inability to pick up small objects with the fingers, and her deficiency in articulation in this category. Her further deficiencies in exploration and manipulation, her attention to stimuli for only a relatively short time, and her inferiority in imitation seem also to us to belong under this heading.

These characteristics we think are independent of the specific humanizing features of the environment in which Gua lived. Certainly this need not mean that the influence of some sort of environment cannot be proven in every one of them. But it does mean that they would probably have developed much as they are in almost any environment which permits healthy and regular growth. They are qualities which for the most part are traceable to bony development, the chemistry of the muscles, the character of the nerve centers including the brain, and the shape and form into which the parts of the organism naturally arrange themselves unless fundamentally altered by violent, irregular, or abnormal outside factors. They are ways of behaving which to our way of thinking would not be strongly affected by training or education.

Environmental Differences. There are other differences in behavior between the subjects; but there are none *involving the ape's deviation from human standards* in which the particular influence of the civilized surroundings can be shown to play an indispensable part. We therefore find ourselves unable to list any reactions under this heading.

Unclassified Items. Can it be said that the reason Gua possessed a greater tendency than the child to avoid strange humans was because she in some way had learned from her associates to behave in this way? Although there are grounds for considering this characteristic an environmental one, it is possible, we must admit, to build up a case for the opposing view. This is consequently a difference between the subjects which comes in the doubtful grouping. Their particular food preferences and aversions may similarly be traceable to the human surroundings, yet here also we are less sure of such a statement. In the matters of the greater psychological dependency of the ape and her stronger attachment to one person, there is even greater uncertainty.

The important point in this connection: The majority of the differences in behavior thus far listed show the chimpanzee to be unaffected in any special or dominant way by the particular civilized aspects of her surroundings.

Likenesses between the Two

When we take up the aspects in which Gua was like Donald, we find a shift in emphasis, for in this category a large proportion of the reactions of the chimpanzee seem to be explainable as a

result of humanizing influences. Within this second major grouping there may again be some question about many of the responses classified, concerning both their influence by the civilized environment and also the degree of their similarity from one subject to the other. It is to be pointed out in this connection that the reactions given are not necessarily *exclusively* human, but they are nevertheless respects in which Gua resembled the child.

Non-environmental Likenesses. Of the similar features of behavior which seem to be relatively independent of the human situation, the reflexes of the two are important. So also are their common drowsy reactions of nodding and of rubbing the eyes. Probably the perception of motion, as in motion pictures, should be placed here, as well as the susceptibility of both subjects to the illusion of reversed sound localization. Their like responsiveness to tickling is no doubt chiefly a matter of similar sense organs and nerve connections, while the sleeping postures of the ape probably resembled those of the child because of the shape and proportions of her body. Perhaps, in addition, we should classify Gua's tendency to forget and her man-like laughter under this heading, although there is a serious question about the latter.

Environmental Likenesses. The upright walking of the subjects, which in many respects was similar, would probably have failed to develop as it did without the humanizing influences. We should therefore consider it an environmental likeness. Here also may be put many of the common play reactions of the two, such as playing with shoes, playing with human faces, playing ball and tag, and playing with the telephone and typewriter. Their like reactions to sizable bodies of water we should classify in this category along with the conditioning to vocal commands and to other specific stimuli, since all these were of necessity controlled or elicited by particular outside influences. Similarly many other definite tasks in which the ape came close to the child's performance, such as pointing to the nose, work with the form board, and scribbling.

Unclassified Items. Concerning playing in the sand, the affectionate behavior of one subject for the other, and the avoiding reactions of each to animals, the classification is less clear. Of course these responses could hardly have appeared as they did except for immediate environmental influences. And yet, the particular human phases of the environment can hardly be considered indispensable; for it is conceivable that similar behavior might well have developed in quite different surroundings. The hand preferences of both individuals, which shifted as a result of outside stimulation, might similarly have changed much as they did under vastly different environmental conditions.

Differences Favorable to the Ape

There remains a third major class of characteristics in which Gua was neither like Donald nor peculiarly like an animal. These are respects in which the chimpanzee was different from the child, yet in which she went beyond him and so behaved like a human older and more mature than he. Her progress in this regard may be ascribed largely to her more rapid rate of development.

Non-environmental Differences. Among the human-like advances of the ape which were probably not outgrowths of the civilized environment belong her superior muscular coordination and more rapid rate of involuntary movement. Her demonstrations of greater strength, accuracy in auditory localization, the compensatory movements during rotation, and her superiority in remembering may also be considered independent of any necessary human effects.

Environmental Difference. In this, the most important group, is shown the capacity of the chimpanzee to acquire responses peculiar to the civilized surroundings which are more complex or more proficient than those of the child himself. Since the performance of Donald was about average for his age, the respects in which the ape surpassed him are re-

spects in which she was generally more advanced than the average human approximately as old as herself. They cast no necessary reflection upon the child, but are rather points of special credit for the ape. She may thus be said to have become "more humanized" than the human subject in the acquisition of behavior of which the child was still incapable.

Here should be placed Gua's skipping. Here also we should put her greater cooperation and obedience, which is a feature of the behavior of well-trained older children. And here belongs her tendency to kiss for forgiveness and her skillful opening of doors. Her more frequent sly behavior suggests the mischievousness of a lively boy, while her superior anticipation of the bladder and bowel reactions may be cited as a more obvious mark of progress. Finally, under this heading should be placed her striking ability to eat with a spoon and drink from a glass, which compare favorably to the corresponding abilities of children considerably older than the ape. These items in our opinion are traceable to the influence of special factors in the human environment which were favorable to their acquisition.

Perhaps at this point, while we are in an appropriately critical attitude, we should turn for a moment upon our own work and consider some significant deficiencies in this investigation itself. For since we have now completed our survey of the abilities of the subjects, we can readily see ways in which the research could have been improved. Without doubt the most important factor in this regard involves the ages of the subjects at the start of the project. In fact, if such a task were to be undertaken a second time, there are two inflexible requirements we would demand. First, the ape should be obtained, in accordance with the original plans, at the age of a month or younger. This would eliminate the unknown influence of an earlier wild or captive environment and would permit more comprehensive conclusions upon the genesis of various types of behavior.

Second, the ape should be reared not in a family with one child, but in a family of several children, the youngest of which is at the start at least a year older than the animal subject. There are advantages both to the anthropoid and to the humans which should accrue from these conditions. The ape would have as continual associates children who were its equal or superior in maturation and agility. Its companions would thus be constantly able to serve as leaders in the development of new behavior. The children, on the other hand, should be correspondingly less inclined to follow or imitate the animal.

Third, in a repetition of the same research it would also be desirable to continue over a longer period of time, although this can hardly be classed as an inflexible requirement. There is always the tendency to say, "Yes, of course. But even though the ape was superior in some respects she would not have remained so if the comparison had covered a long enough interval." Such an outcome without question presents a possibility of great importance. It is also quite possible, nevertheless, that the matter of time would prove less significant than at first it may appear. For example, had the experiment continued for twice as long and the results remained much as they are, the same objection could be raised. Had it lasted three or four times as long with similar findings, one could always say the same thing. Indeed, if we are entirely open-minded on the subject, we can hardly overlook the logical possibility that the ape might continue to demonstrate a superiority in many outstanding ways. Such a contingency from an unprejudiced viewpoint should be placed on a parity with the possibility that the child would eventually triumph in those respects in which he was found to be less proficient than the ape. It is rather, therefore, to determine in which way the further development would lead, whether for "better" or for "worse," that it would be advisable to keep on for a longer interval.

We note, finally, by way of criticism, that there is a strong tendency in an in-

vestigation of this type to commit the error of anthropomorphism, that is, to ascribe to the animal and to the young child adult- and manlike attributes which they do not actually possess. Of course no one can ever tell except by the somewhat doubtful methods of inference or analogy whether animals or even human infants are capable at all of such complex mental experiences as of *feeling* or *thinking*. And yet, if one sees them behave in peculiar or unusual ways, he may be sorely tempted to interpret that behavior as it appears to him. In such cases one runs the risk of giving the objective actions a mental quality based upon his own experience. Hence, if a tiny baby, immediately after spilling some milk, begins to cry, the incautious onlooker may say, "He is angry or disappointed." In all strictness, however, the elements of "anger" or "disappointment" are added by the observer. All that is objectively known is that (1) the milk is spilled and (2) the baby cries. It is possible, to be sure, that the observer is correct in his appraisal, but, unless the baby in some way can tell him, the correctness of his inference must forever remain unknown.

This inclination to see in all other organisms the same feelings, emotions, thoughts, and impulses which man himself experiences has met with such severe treatment at the hands of many contemporary scientists that some have tended, so it seems, to lean in the opposite direction. As a result, elaborate precautions are often taken in scientific discussion to avoid the use of words which by the remotest suggestion possess an introspective or anthropomorphic savor.

But note that in the present research we set out at the start to discover just how manlike an animal could be. We deliberately attempted, in other words, to make the non-human subject *as anthropomorphic as possible*. All the conditions of the study were directed towards this very end. How, then, can we recount manlike activity without ascribing to the subject the manlike qualities which this activity implies? The question of **anthropomorphism** in this particular instance seems to present an unusual difficulty. Probably the most obvious answer to this question is to confine oneself rigidly to the discussion of behavior, and this in the main is what we have endeavored to do. We have therefore tried to avoid such expressions as, "The ape was afraid," and have usually substituted instead, "She acted *as if* she was afraid," or "She *seemed* to be afraid." Yet to a large extent even statements of this sort, which cover broad general phases of behavior, are colored by the impressions of the onlooker. We have taken the view that such impressions, if carefully evaluated, were better recorded than left out, since their omission often fails to give the picture completeness. The description cannot be composed entirely of details. There must perforce be some generalities. If included, on the contrary, they may do violence to the actual events.

It is impossible to escape such arguments. The reader of a written report must accept his facts as somewhat tarnished or affected by the hands through which they have already passed. He is committed to form his own conclusions through the intermediate eyes of the observers. The personal element can seldom if ever be eradicated from observations of this sort. But to the extent that the observer, like a field glass or a telescope, presents a distorted or foggy view, he may be accused of misrepresentation.

We sincerely hope to avoid any such accusation. It has been our wish to give an accurate and non-partisan account of the development of the subjects without on the one hand sensationally glorifying the capacities of the chimpanzee or on the other hand attacking or belittling them. We have tried to remain on the sidelines as careful but unbiased observers. If we have failed, we are genuinely sorry. If, in addition, we have in any way offended the sensitive or critical reader, we beg his indulgence for the unknown influence of personal attitudes, which it seems no one can ever quite escape.

THE INDIVIDUAL FROM CONCEPTION TO CONCEPTUALIZATION

FRANK A. BEACH

Discussions of **ontogenesis** traditionally separate *prenatal* and *postnatal* differentiation and growth. It is also customary to distinguish between physical and psychological development. One aim of this address is to emphasize the similarities and continuities between prenatal and postnatal, and between physical and psychological development. It is my purpose to elucidate a few simple principles which are pertinent to the interpretation of different kinds of development occurring at different stages in the individual's life span. I shall try to show that wherever and whenever it occurs, development obeys certain common laws. All development, whether it be development of the lens of the eye, or development of abstract concepts of morality, follows an orderly and predictable course and is best understood as the product of mutual interaction between a few classes of basic factors.

Embryology of the Vertebrate Eye

Let us begin by considering as our first example the embryological development of that most important sensory structure, the vertebrate eye. At a time when the embryo is little more than a hollow ball, certain groups of cells begin to grow rapidly and to form what eventually will become the spinal cord and brain. Long before the cord has been fully formed it is possible to identify, in that region which will become the brain, two small, laterally placed pits or depressions. When development has proceeded a little further, these pits increase in size, balloon outward, and become the optic vesicles. With continued growth, the optic vesicles are extended closer and closer to the surface of the embryo-to-be, all the time maintaining their connection with the more central brain regions by way of the short optic stalks.

As the optic vesicles approach the surface, they change in structure and take on the shape of a two-layered cup. While the optic cups are forming, a small portion of the outer layer, that is, of the ectoderm, starts to sink inward toward the cup. This migrating group of cells forms into a hollow ball which eventually comes to rest in the cavity of the cup and forms the lens of the eye.

This is a brief and oversimplified account of one small step in normal embryological development, but it typifies the complexity and at the same time the orderliness of differentiation and growth. The sequence of changes leading up to formation of the eye-cup and lens seems stereotyped, automatic, almost mechanical. It appears to occur identically in all embryos of the same species and presumably has been occurring in the same fashion for however many millions of years that species may have existed. How are we to account for such a complex yet regular and lawful sequence of phenomena? It was once believed that such an orderly series of events must depend exclusively upon some intrinsic properties of the various cells involved. However, a series of ingenious experiments revealed that this is not at all the case.

Experiments on the Lens Organizer

It is now known that the scientist can alter the normal course of development in various ways. For example, by delicate surgical methods one can remove from the surface of the embryo a small patch of tissue, which ordinarily would develop into skin of the belly wall. The next step is to insert this block of ectoderm in a position directly above the developing optic cup, having first removed

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the cells which normally grow there. When this is done, the tissue that originally was destined to become belly skin will form a lens. And this lens is identical to the one that would have been formed by quite different cells if the experimentalist had not interfered. It is equally feasible to induce formation of a lens in parts of the body where one would not normally grow. This can be done by removing the optic cup and transplanting it to a new location. If a growing optic cup is implanted beneath the surface of the embryo, in a region which normally would develop into skin of the back, a lens will be formed by those cells that lie directly above the transplanted optic cup.

As can be imagined, the operations involved are exceedingly delicate, and one cannot expect success in every experiment. Nevertheless, the results which I have described occur with sufficient regularity to justify the conclusion that the direction which the development of a bit of tissue may take is not determined solely by inherent characteristics of that block of tissue, but depends as well upon its location within the organism. In other words, the structures which groups of cells eventually come to form are in part dependent upon the identity of these cells' neighbors.

It must be stressed that this sort of plasticity is not unlimited. On the contrary, the tissue to be transplanted must be taken at just the right stage in its development, and the transplant must be made at a particular time when the adjacent tissues are capable of exerting their directive influences over neighboring masses of cells.

The concept of **organizer substances** has been invoked to describe the sort of phenomena that I have been talking about. It is believed that the optic cup produces a certain substance, an organizer, which exerts action upon ectodermal tissue causing it to approach the cup and to form a lens. The organizer is produced only for a limited time, and if it is to have any effect upon other cells, the optic cup must be transplanted at the appropriate time. Of equal importance is the fact that the susceptibility of ectodermal tissue to the effects of the optic cup organizer changes through time. Cells that are too far along in their course of development can be transplanted into a region adjacent to the cup, but they will not react to the organizer.

Experiments with the Primary Organizer

Other embryonic organizers are known to exist. For example, the first organizer is probably one produced by a group of cells lying near that region known as the blastopore. From cells in the dorsal lip of the blastopore there comes the organizer which initiates formation of the nerve tube that eventually will become the brain and spinal cord. It has been shown that cells which would normally be involved in formation of some other part of the body can be induced to develop into a spinal cord and brain if they are transplanted into the neighborhood of the blastopore lip.

Furthermore, if tissue is taken from the dorsal lip of the blastopore and implanted elsewhere in the blastocyte, it will induce the formation of a nerve cord and brain in that new location. A classic experiment by Spemann and Mangold involved removing the dorsal lip of the blastopore from one salamander blastocyte and implanting it in a second embryo-to-be. The recipient blastocyte then contained two sources of primary organizer, the transplanted blastopore lip and its own blastopore tissue. The result was the formation of two nervous systems within the same embryo, one induced by the transplant and the other induced by the embryo's own organizer cells. Here again, as in the case of induction of the lens, it is essential that the reacting tissue be transplanted at a specific stage in its own development; and it is also necessary that the transplantation be done while the dorsal lip tissue is actively producing the organizer substance.

The story of experimental control of embryological development is a long and

fascinating one, but enough has been said to establish the point I wish to make. This is that the embryological history of any organ or organ system in the body is a joint product of the inherent characteristics of the tissues which formed that organ, and of external influences exerted upon those tissues, either through the activity of other parts of the organism, or in some cases by extraorganismal factors. Throughout the course of **morphological** differentiation and growth, the basic processes involved are those of interaction between cells or cell masses and their environment. Neither the intrinsic developmental capacities of the cells, nor the activity of external agents is sufficient to explain the final result. Both must always be taken into consideration and both are equally important. One subsidiary principle which is well illustrated by this evidence is that the organism and its various parts change through time with respect to the susceptibility to modification. It seems likely that every cell or group of cells passes through a critical stage of growth during which it is maximally sensitive to outside influences. Having passed this period of high susceptibility the cell or cells are no longer easily changed.

Development of Visual Perception

Let us turn now from the consideration of embryological development and examine the growth of sensory capacities in early life. It is well known that the newborn baby is extremely limited in his visual ability. He cannot fixate his eyes for any appreciable length of time and it seems quite clear that precise pattern vision does not develop for many weeks. Only after several months does the infant become capable of discriminating objects visually and recognizing a familiar face. A part of this gradual improvement is referrable to maturational changes in the visual apparatus. The contribution of *experience* is difficult to assess, because the infant is unable to use speech and his psychological capacities are limited. However, there is evidence proving that visual abilities which might ordinarily be put down to simple maturation are in fact heavily dependent upon early stimulation and experience.

This evidence comes from the study of adult humans after removal of congenital cataracts. Von Senden has summarized a number of cases in which the preoperative condition of the lens was such that detailed vision had never been possible from the time of birth. Following removal of the cataract all of the patients are able to perceive the presence of a figure in the visual field. They can distinguish a figure from its background, but they cannot identify the figure or describe its shape. After a little practice most patients are able to name colors, but from this point on progress is slow and often discouraging.

Some individuals never improve beyond the ability to identify objects in terms of brightness and color. Others take months or even years to learn to identify simple geometric figures and to read separate letters and numbers. Only in rare cases do these patients master the problem of identifying complex visual patterns such as words, or outline drawings, or human faces. One woman was hospitalized for more than half a year postoperatively, and during this time she was visited daily by two physicians. Six months after the cataract had been removed this patient was totally unable to tell the doctors apart on the basis of their facial characteristics, although she could do so easily in terms of voice or other nonvisual features.

Impressive as it is, this evidence does not constitute conclusive proof of the importance of protracted visual experience for normal visual abilities. In the first place, the absence of the lens can never be completely compensated. Furthermore, these patients characteristically exhibit jerking movements of the eyes, the so-called spontaneous nystagmus. For these reasons it is highly desirable to obtain experimental data on animals in which such factors can be controlled.

This sort of evidence is now avail-

able as a result of the careful investigations of Dr. Austin Riesen. Riesen reared young chimpanzees from birth to 16 months of age in a completely darkened room. The two infants in his first experiment were brought into the light at 16 months. At this age they were unable to fixate objects in the visual field, although the normal 16-month-old chimpanzee is visually well developed. Some reflex responses to visual stimulation were present in the dark-reared apes. These reactions included pupillary constriction to bright light, startle response to sudden changes in illumination, and visual following of a large, moving target. Visual responses to complex patterns of light appeared eventually, but not until many hours had been spent in illuminated surroundings.

The chimpanzees did not respond visually to play objects or to their feeding bottles, although both of these were promptly oriented to and grasped if they touched some part of the animal's body. The apes did not blink when a blow toward the face was threatened, and if an object was brought slowly toward the face the first reaction was a startled jump when contact occurred.

Some question was raised concerning structural normality of the retinae and optic discs as a result of total absence of visual stimulation during the early phases of life; and to check this possibility a second experiment was conducted in which three more newborn chimpanzees were put into darkness. One animal was raised for seven months in complete darkness. One was allowed 90 minutes of light every day, during which time the head was covered with a white, plexiglass mask that admitted diffuse light but did not permit pattern vision. The third chimpanzee was given one and one-half hours of patterned light daily.

With minor exceptions, the behavior of the animal reared in complete darkness and the one allowed 90 minutes of unpatterned light per day was similar to that which was shown by the two animals in the original experiment. In contrast, the ape which was allowed 90 minutes of patterned light per day behaved like a normal chimpanzee. He quickly learned to avoid a large yellow-and-black-striped disc after receiving one or two mild electric shocks from it; whereas the other chimpanzees were shocked from the same disc twice a day for six and nine days, respectively, before they so much as whimpered when it was shown to them. It took 13 and 15 days before these animals consistently indicated, by some sort of avoidance response, that they saw the disc when it was raised in front of their eyes.

Results of this sort, taken together with the clinical evidence from human beings, strongly suggest that early learning and experience play a very important role in the development of perception by animals and men. It is obvious that the way a person interprets a complex visual stimulus such as a portrait or painting will depend upon his tastes and knowledge gained through experience. It is equally true, but less apparent, that the capacity to see the difference between a circle and a square is also a product of individual learning. . . .

Effects of Practice on Maternal Behavior

It is customary to classify certain complex patterns of behavior as instinctive. The validity of this taxonomic procedure is open to serious question, but this is not an appropriate occasion on which to debate it. The **instinct** concept implies that certain kinds of behavior appear normally without the necessity for practice and learning. In the main, the so-called instinctive responses are reasonably constant for a given species, although they vary from species to species. Instincts are ordinarily contrasted with the habits and learned responses which are formed by the individual as a result of personal experience.

One instinctive pattern of behavior which has been studied fairly extensively in the laboratory rat is the maternal care of the young. It has been demonstrated independently by a number of investigators that female rats that have no pre-

vious experience in bearing or rearing young are capable of building a nest before the advent of the first litter, cleaning the young as they are born, keeping them together in the nest, nursing and protecting them until they reach the age of weaning.

In an experiment which I conducted a number of years ago female rats were separated from their mothers at the time of weaning and each one was reared in an individual cage where she had no contact with other animals. When they reached adulthood the females were placed with a fertile male just long enough for mating and were then returned to their isolated cages. Approximately five days before the litter was due to be born, each female was placed in a large observation cage and provided with nesting material. The majority of females readily detached paper strips which were hung from the walls of the observation cage and used them to build simple but adequate nests. As soon as the young were born the female took them between her forepaws and licked off the fetal fluids and devoured the fetal membranes. Inasmuch as I knew the entire history of each of the experimental animals I was quite sure that this behavior was properly classified as instinctive, and that it did not depend upon prior experience. More recent studies throw some question upon this naive interpretation.

Dr. Bernard Riess has conducted several experiments in which female rats were reared in an environment containing nothing which could be picked up and transported. He has found that when females of this type become pregnant and give birth to young, they build no nests and are lax in the care of their offspring. Riess's interpretation is that the normal rat has ample opportunity for experience in moving objects about the environment. When this very general sort of experience is denied the animal, there occurs a deficit in the behavior which demands precisely this kind of response. And it is true that in the early experiments, including my own, females were not prevented from doing as much transporting as they wished of food pellets, sawdust, shavings, and other materials commonly available in the living cages.

Experiments on Sexual Behavior

The sexual behavior of animals is usually classified as instinctive or unlearned. In fact, this type of behavior has often been cited as an excellent example of what is called a "delayed instinct." It is supposed to appear automatically at puberty in response to the physiological changes which occur at this time. It is considered to be the product of physical maturation and to be independent of previous experience. The inadequacy of any such interpretation is revealed by recent experiments on the mating behavior of the laboratory rat.

Two years ago Mr. Jerry Kagan and I conducted an experiment in which male rats were reared in individual cages from the age of weaning. Some of the rats were removed from their isolated cages for a brief period each week and were placed in a large observation cage together with another young rat their own age and size. These weekly, ten-minute periods of contact represented the experimental rats' sole opportunity to form habits of social interaction with another individual of their kind.

When they reached sexual maturity all of the animals were tested with receptive females. The mating performance of the experimental rats was quite abnormal. They were highly excited by the presence of the estrous female and responded to her with the execution of incomplete mating attempts. At the same time, however, there occurred many playful responses of mock fighting, chasing and wrestling which are characteristic of the *immature* rat. The achievement of complete intercourse was so rare that the experimental males practically never reached the sexual climax. The infrequency of coital responses was due to the competing tendency to engage in immature, playful activities. Apparently the extremely arti-

ficial conditions of early life favored the development and retention of social habits that were inappropriate in adulthood. Presumably in *normal* development the tendency to react playfully to a second animal appears in late infancy but is gradually replaced by other forms of social interaction. The conditions of our experiment did not provide opportunity for the development of more mature types of behavior and in the absence of this essential opportunity the animals remained fixated at a prepuberal level.

This evidence suggests that abnormal experiences in early life can interfere with the development of normal sexual behavior. It does not prove that the mating of rodents depends upon sexual practice and learning. However, in the higher mammals it is quite probable that biologically-effective intercourse necessitates a considerable amount of sexual experience.

It has recently been reported by Dr. Henry Nissen that young male and female chimpanzees which are sexually mature, but have never had any heterosexual experience, are incapable of engaging in complete sexual relations. Males and females of this species which have been reared under conditions that did not permit heterosexual play do not mate when they are placed together in adulthood. It seems probable that if an indefinite period of exploration and experimentation were permitted, coitus would eventually occur; but under the controlled conditions used by Dr. Nissen, young males and females that were placed together when the female was at the height of her receptive cycle failed to engage in any primary sexual activity in the course of hours of observation. Mating responses are much more likely to occur if at least one member of the pair is sexually experienced.

It appears that normal development of sexual behavior involves both physiological maturation and behavioral experience. Neither factor alone suffices to produce the final product.

Studies of Imprinting

One large body of evidence which emphasizes the importance of experience and early environmental stimulation in the development of social behavior is provided by the studies of the ethologists, or students of animal behavior under natural conditions. One of the first observations dealing with early social conditioning was published by Wallace Craig in 1918. Craig reported that pigeons which had been reared by parents of a different avian species preferred to mate with birds belonging to the same species as their foster parents, and were very slow to form sexual unions with individuals of their own kind.

More recently the German ornithologist, Dr. Konrad Lorenz, has described a process which he calls **"imprinting."** According to this hypothesis young birds of certain types form strong social attachments very shortly after they leave the egg. Under normal conditions, hatching takes place in the presence of the mother bird, and the young birds soon learn to follow and remain close to the adult female. This tendency is strengthened by virtue of the fact that the mother calls the young to food and protects them against natural enemies.

In a series of naturalistic, semi-experimental studies, Lorenz arranged to substitute himself as a foster parent. He became Father Goose to a brood of graylag goslings. The youngsters were prevented from any contact with adults of their own species and were periodically attended by Lorenz as he crawled about in the grass on his hands and knees and made gooselike noises. The result was that the newly hatched birds accepted their foster parent enthusiastically and followed him about wherever he went. Adult geese held no attractions for the adopted offspring of Dr. Lorenz, and this particular brood of birds retained the strong positive reactions to him for many months.

Other investigators have confirmed in part the initial findings of Lorenz and have shown also that imprinting is not limited to geese but can be observed in several other avian species. In addition, it is possible that a similar process oper-

ates in the early social conditioning of those species of mammals which are born at an advanced stage of development and which are by nature gregarious. For example, there are several descriptions of lambs which have been reared by hand and have had no early contact with other animals of their own species. These individuals are said to form social attachments to human beings and to be quite unsheeplike in regard to their behavior in the pasture. They tend to graze alone and do not move with the flock.

Under ordinary conditions the newborn lamb displays a very strong tendency to remain in close contact with its mother. As soon as it can get to its feet, the youngster rubs against the ewe and when she moves away, it follows immediately. At this point any enforced separation elicits immediate distress behavior in the young and the parent. Somewhat later in development the lamb may leave its mother's side briefly to investigate its environment or to play with another young sheep. Eventually the positive social response generalizes from the mother to include all other members of the flock. This orderly course of development in social behavior is dependent jointly upon inherent aspects of the sheep's behavioral capacities, and upon individual experience. The final result is a product of interaction between these two sources of influence. Furthermore, as is true in experimental embryology, susceptibility to the influence of external agents varies through time. Lambs deprived of the usual contact with other sheep in the early stages of life do not become normal sheep even though opportunity for such contact is provided at a later developmental stage.

Early Experience and Cognitive Development in Children

Thus far I have been speaking about the effects of early experience upon the development of perceptual functions and upon the ontogenesis of emotional, instinctual, and social behavior. Another axis of development which is of great importance is, of course, the development of intelligence or of cognitive capacities. When intelligence tests were first introduced, and the IQ was invented, there was a great deal of speculation and argument concerning the so-called *constancy* of the intelligence quotient. In the beginning, some proponents of the testing movement insisted that the intelligence test measured innate intellectual capacity and was independent of the effects of learning and experience. It has since become apparent that this extreme view is untenable, and it is questionable whether any psychological test is completely immune to the effects of certain widespread, not to say universal, forms of early life experience.

The Swiss psychologist, **Piaget**, has suggested that the way in which children think about the surrounding world and about themselves undergoes a regular development as the child grows older. The individual's way of thinking passes through several distinctive stages before adult ideas are attained. The theory is not that the child grasps adult ideas with different degrees of adequacy, but rather that it develops ideas which differ *qualitatively* from those of the adult.

The primary stage of thought development differs from the intermediate and final stages in that it is relatively unaffected by the culture into which the child is born. The child's primary concepts, be they concepts of names or of windstorms or any other phenomena are generated by the child himself. Primary concepts reflect the child's perception of, and reflection upon, its **environment**; but they are relatively unaffected by adult ideas because at this age the child is not in good contact with adult ideas, and in any event is unable to understand them.

Piaget believes that these primary ideas are arrived at independently by each succeeding generation, and eventually discarded in favor of the adult ideas favored by the particular culture in which the individual grows up. Furthermore, many of the primary ideas are the same in different cultures and in different generations. This is so because of certain assumed constants in the human psycho-

logical processes, and because of certain environmental universals, that is, certain factors and phenomena universally present in the worlds of all children.

These hypothetical environmental universals may be likened to the many constants present in the environment of the human fetus. A particular concentration of oxygen, a given amount of calcium, an essential supply of iodine—these and many other things must be available to the embryo if it is to develop normally. However, since they are almost always present, their contribution to normal growth and differentiation is easily overlooked. Only when one or another of the essential items is lacking is its essentiality apt to be recognized.

Carrying the analogy back to psychological development, we can ask the following question: If Piaget's thesis is sound, what are the cultural universals that contribute to the beginning of thought and the derivation of primary concepts? Many answers suggest themselves and one of the most obvious is the stimulation afforded all children of every society by contact with other human beings. There is some reason to believe that this is an indispensable factor in normal psychological and perhaps even physical growth.

At the beginning of this address I cited certain findings reported by Dr. Rene Spitz and they bear directly upon the point under examination. Dr. Spitz studied two populations of European children. One group lived in a home for foundlings. The other was established in a nursery attached to a women's prison. Tests administered very early in life indicated that the two groups did not differ significantly in intellectual endowment and were comparable as far as physical characteristics were concerned. During the first phase of life the development of children in both groups was similar, but at approximately the fourth month the developmental curve for foundling home children decelerated, while that of the children in the nursery home continued to rise normally. In addition, although both institutions maintained adequate health precautions, the physical development of the foundling home children was markedly retarded.

So far as Dr. Spitz could ascertain, the crucial difference between the groups lay in the amount of social stimulation the children received. Up until the fourth month babies in both homes were breast fed and after that time the foundling-home group was fed by bottle. Infants in the nursery were fed by their own mothers, who were prisoners, and who were allowed several hours each day to spend with the children. During this time most of the children in the nursery received a great deal of affectionate care and attention. Children in the foundling home were attended by a staff of nurses, too few in number to permit any extra attention outside of seeing to it that the children were not allowed to go hungry and were kept clean. In the foundling home each child remained in its crib all of the time. The sides and ends of the crib were draped with sheets so that all a child could see for most of the day was a portion of the ceiling directly above him. He could not see other children, and only saw an adult while he was being fed or cleaned. Nursery children were given playthings and toys, but these were lacking in the foundling home.

I have already summarized Dr. Spitz's observations when he returned to the foundling home when the children who were still there were between two and four years of age. The deterioration which he had observed in the first year of life had progressed even further. He found in addition, that improving the environmental conditions after approximately the fifteenth month of life had no beneficial effects. For example, some children were put into a different ward with older individuals. There, they lived in a large, sunny room without partitions. Several nurses were present at all times and the children were taken from their cots and allowed to play about on the floor. Thus they had much more social stimulation than they previously experienced, but the defects due to earlier isolation proved ir-

reparable. Dr. Spitz sums up his own findings as follows:

> It would seem that the developmental imbalance caused by the unfavorable environmental conditions during the children's first year produces a **psychosomatic** damage that cannot be repaired by normal measures. Whether it can be repaired by therapeutic measures remains to be investigated. We have advisedly spoken of psychosomatic damage. From the figures given above it can be seen that quite apart from the inadequate psychic and physical development, all these children showed a seriously decreased resistance to disease, and an appalling mortality. Those who survived were all far below the age-adequate weight reached by normal children of comparable age.
> In contrast, the children living in the nursery, although the oldest of them was half a year younger than the youngest child in the foundling home, and two-and-one-half years younger than the oldest in the foundling home, all ran lustily around the room; some of them dressed and undressed themselves; they fed themselves with a spoon; nearly all spoke a few words; they understood commands and obeyed them; and the older ones showed a certain consciousness of toilet requirements. All played lively social games with each other and with adult observers. Their physical condition was good and during the time covered by the study not a single child from the nursery died.

In interpreting these findings it is necessary to recognize that the social isolation of children in the foundling home was so pronounced that it can scarcely be matched by any other carefully documented account on child rearing. It is true that in some societies the mother pays but little attention to her infant, and individual cases of serious neglect are occasionally encountered in our own culture. But almost never is an infant left to spend practically all of its time without any human contact. If a society compels the mother to work in the fields or allows her to be away from her child for most of the time, alternate provisions for its care are made. In some cultures it is traditional for older siblings to care for the youngest members of the family, and in our society either a relative or a hired attendant is with the young child most of the time.

The individual from conception to conceptualization

It seems well within the bounds of possibility that one of the universal conditions affecting human development is the impact of a considerable amount of stimulation from the environment, particularly the opportunity for social interchange with other human beings. Like the iodine content of the prenatal environment, this postnatal environmental condition is so widespread and universal that its importance is easily overlooked. If this line of reasoning is valid, the similarity between pre- and postnatal, and physical and psychological development can safely be described as fundamental and important. The gradual increase in intellectual powers is attributable, not to environmental support and direction, nor yet to inherent maturational processes, but rather to the continual interaction of both types of factors.

Cognitive Development in Animals

If experience makes important contributions to normal intellectual development, and if experiential deficits can prevent or retard such development, it is at least conceivable that by increasing the appropriate kinds of stimulation or experience one might induce a supernormal degree of intellectual ability. This in essence is what we try to achieve with our formal educative machinery and the informal tutelage of our own children. But the effects of an "enriched" early environment are most clearly revealed in experimental studies and observations on various kinds of animals.

A number of years ago Dr. Henry Nissen studied the behavior of chimpanzees in their native habitat. One of the most interesting conclusions reached as a result of this work was that the free living chimpanzee is less well developed intellectually than is his relative who has been born and reared in the experimental laboratory. The environment in which these animals normally exist is a beneficent

one. It poses relatively few problems for the individual to solve and makes minimal demands upon his learning ability. The climate is gentle and even, food is abundant, and natural enemies are scarce. Accordingly, the average chimpanzee can get along quite well without ever extending himself intellectually.

In contrast, the ape that is bred and reared in the psychological laboratory is faced with many man-made problems that never trouble his wild cousin. His food is provided, but he often has to work for his dinner, and in solving the various problems put before him by the experimentalist the animal gradually acquires a degree of sophistication which far exceeds that of the free living ape.

Comparisons of this sort suggest the interesting hypothesis that the normal or average psychological status of a given species is in part dependent upon the environmental demands placed upon all members of that species by nature. If this were true, then the possibility mentioned earlier could be investigated. It might be feasible to elevate individuals far above the norm of their species by artificially increasing the problematical aspects of the life circumstances and multiplying the situations in which learning is possible and necessary. The conditions of human life are rendered highly complex by the existence of cultural or social problems that do not confront members of other species and it is not unlikely that man's unique intellectual characteristics depend in appreciable measure upon this fact. One way of assessing the effects of this factor would be to expose the young of some other species to the same environmental opportunities and necessities which confront the growing human child. This has been attempted by several investigators; and one of the most recent and ambitious of such projects is one which I mentioned at the beginning of this address. I refer to the work of Keith and Catherine Hayes at Orange Park, Florida. Their chimpanzee, named Viki, was adopted a few days after birth and has now spent nearly six years in their home. Insofar as it was possible and consonant with the major purpose of their experiment, Dr. and Mrs. Hayes have reared Viki as they would a human child. The over-all plan necessitated many tests and observations to which children are not subjected. When Viki appeared to be markedly inferior in some respect, special training was usually given, to determine whether the deficiency could be overcome. During much of her life such training took place at mealtime so that she worked for most of her food.

An extensive diary has been kept of Viki's activities, and she has been compared with children and with laboratory chimpanzees in a variety of formal tests. The findings published to date do not go beyond Viki's status at three years of age. In general, she has closely paralleled the development of a normal human child, and her interest and abilities appeared in roughly the same sequence and at about the same rate. Her social behavior is that of an extrovert; she seeks the company and attention of people and is very friendly although somewhat aggressive with those who allow her to dominate them. Like human children Viki spends most of her time in play. However, her play is much more athletic and her skill far surpasses that of a child of the same age.

In *contrast* to human children, Viki is much less vocal. Unlike the three-year-old boy or girl she does not babble or chatter. She does not appear to be seriously retarded in interest or capacity to deal with concrete objects. She scribbles, cuts with shears, builds with blocks and Tinker Toys, hurls and catches balls, operates light switches and door handles, all with about the same skill and enthusiasm of most three-year-old humans. One of her favorite toys at three years of age is the telephone which she holds to her ear while dialing a few numbers at random.

Viki seems to have about as much preference for social play as do children. She leads human beings about by the hand, coaxes them to tickle her, begs for

piggy-back rides, brings toys which are used in social games, and enlists human aid in exploiting new gadgets by firmly placing the human's hands at the appropriate spot. She is adept at social imitation and, just like a human child, she copies her adopted parents' routine chores. She dusts, washes dishes, sharpens pencils, saws wood, hammers and sandpapers furniture, paints woodwork, and presses photographs in books.

In an experimental analysis of her imitative behavior Viki was required to solve six problems which were also given to four human children of about the same age. Four of these six problems were presented to a laboratory raised chimpanzee nine months older than Viki. These problems in imitation involved obtaining a toy or piece of candy in various ways, such as throwing a ball at the toy to knock it down, pushing it out of a long tunnel with a rod, or by operating a light switch on the wall which released the prize magnetically from the ceiling. In other problems the incentive was placed in a box which could only be opened by using a stick to strike a distant string, by burning a nearby string with a candle flame, or by pulling three levers in a certain sequence.

The chimpanzees and children were allowed to attempt a solution first, to be sure that it could not be done readily by insight or by trial and error. Then the experimenter demonstrated the proper procedure, and allowed the subject to try again; if she was unsuccessful, additional demonstrations were given. There was little difference between the performance of Viki and the children—they usually solved these problems within a few trials. The laboratory chimpanzee solved only one, and his failure with the others seemed due, at least in part, to his lack of skill in manipulating the apparatus.

When Viki is given psychological tests that do not involve language, they indicate that her general intelligence has developed at about the same rate as that of a human child. At three years she performed with appropriate skill on such test items as form boards, peg boards, picture puzzles, block piling, and buttoning. However, she fails completely on tests of verbal intelligence. In fact, language is the one field of behavior in which Dr. and Mrs. Hayes have so far been able to find a large, clear-cut, and important superiority of man over chimpanzee. In summarizing their first three years of observation, the Hayeses came to the following conclusion:

> If we assume . . . that Viki's mental development will continue to parallel that of man to maturity—as it appears to have done for the first three years—then our results strongly suggest that the two species are much more alike, psychologically, than has heretofore been supposed. They suggest, in fact, that man's superior ability to use language may be his only important *genetic* advantage. This one genetic advantage makes further advantages possible, however, since language is a means of sharing knowledge. Intelligence depends upon three factors: the individual's innate capacity, his personal experience, and the experience he acquires second hand, through communication with others. This last factor, while unimportant to most species, makes man less dependent upon individual abilities, by providing him with a more effective "group intelligence."

In spite of the fact that Viki could not master and use language, she did develop learning and problem-solving ability to a level considerably above that of the ordinary chimpanzee. These superior attainments were due in part to the continuous stimulation and tuition provided in the home environment. Combining this evidence with the observations of Dr. Spitz leads to the conclusion that intellectual development depends upon certain nonexperiential variables, such as those that differentiate man and chimpanzee, and upon certain forms of experience occurring early in life. Serious deficiencies are apt to appear if experience is impoverished; and enrichment of early experience is essential if development is to re-

sult in full achievement of the individual's potentialities.

Summary and Conclusions

I hope that I have successfully laid the groundwork for four important generalizations about development. The first generalization states that development always depends upon certain, crucial external forces which act upon the developing system. The second is that development is equally dependent upon inherent characteristics of the system, including its sensitivity to environmental influences. The third is that this sensitivity or capacity for response is not constant or stable, but tends first to rise to a maximum and then to decrease and disappear so that the critical extrinsic factors can exert their normal effects only if they are present when responsivity of the reacting system is high. Later in development the same agents may be without effect. The fourth and final generalization is that all of the foregoing ones apply to all aspects of organic development, from the differentiation and growth of the embryonic neural tube to the gradual formation of basic emotional patterns and characteristic habits of thinking.

The range of phenomena, the multiplicity and variety of systems which obey the same, fundamental, ontogenetic laws is at first thought astonishing. How has it come about that development of the eye in the human embryo, and the development of primary ideas in the young child have so many features in common? The answer is that morphological and psychological development belong on the same continuum, and both represent end products of the same evolutionary process. Both have been exposed to and shaped by the selective forces or organic evolution.

These studies of development reemphasize an oft-stated but important fact mentioned at the beginning of this address and worthy of repetition before an audience which includes specialists in several areas of biological and social science. There is no fundamental discontinuity between pre- and postnatal existence, nor between the physical and psychologic aspects of the individual.

SUGGESTIONS FOR FURTHER READING

Borek, E., *The Code of Life* (New York: Columbia University Press, 1955). Describes developments in the field of genetics.

Caspari, E., "Genetic Endowment and Environment in the Determination of Human Behavior: Biological Viewpoint," *American Educational Research Journal,* Vol. 5, No. 1 (January 1968), pp. 43–55. Analyzes the heredity-environment issue and stresses the uniqueness of the individual.

Crick, F. H. C., "The Genetic Code," *Scientific American,* Vol. 207 (1962), pp. 66–74. A fairly technical but rewarding article that clarifies some of the bases of heredity.

Eisenberg, L., "Genetics and the Survival of the Unfit," *Harpers Magazine,* Vol. 232, No. 1388 (1966), pp. 53–58. The solving of more and more hereditary puzzles raises questions about increasing numbers of prospective parents with defective genes. The author examines the many pitfalls that endanger any program of eugenics. A certain number of "defective" genes may actually be desirable.

Freedman, D. G., and B. Keller, "Inheritance of Behavior in Infants," *Science,* 1963, Vol. 140, pp. 196–198. On the basis of studies of pairs of identical and fraternal twins separated in infancy and reared under quite different environmental conditions, it was concluded that heredity played a significant part in ability, temperament, and general personality functioning.

Hooker, D., *The Prenatal Origin of Behavior* (Lawrence, Kansas: University of Kansas Press, 1952). Hooker experimented with over a hundred fetuses, recording their behaviors on film. This excerpt deals with the neonatal period as part of continuous human development, the integrative nature of the nervous system, and methods used in such research.

Ingalls, T. H., "Congenital Deformities," *Scientific American,* Vol. 197, No. 4 (1956), pp. 109–116. Three deformities are related to possible injuries at specific periods of embryonic development.

Muller, H. J., "Should We Weaken or Strengthen Our Genetic Heritage?" *Daedalus,* Vol. 90 (1961), pp. 432–450. A readable discussion that does not require an extensive knowledge of human genetics.

Muller, H. J., "Genetic Progress by Voluntarily Conducted Germinal Choice," in Gordon Wolstenholme, ed., *Man and His Future*. (Boston: Little, Brown, and Co., 1963), pp. 247–261.

Neel, J. M., "The Genetic Potential," *The Nation's Children II*, ed. Eli Ginzberg. (New York: Columbia University Press, 1960), pp. 1–23. Dr. Neel reviews some of the chief ways that heredity may affect offspring, with implications for eugenics. Contrary to the usual passive resignation, he poses a challenge that each individual be endowed with the fullest genetic potential possible.

2

BIOLOGICAL FACTORS IN DEVELOPMENT

Men have always recognized, on grounds of varying merit, the importance of physical characteristics. From the most sophisticated societies to primitive tribes, assorted physicians, physiologists, and medicine men have concerned themselves with the body. Phrenologists have proclaimed the high forehead a reliable clue to intelligence; and palmists have read men's futures in their hands.

Likewise, children's physical problems have always been a matter of concern, the problems receiving attention varying with the times. Among the topics that have been investigated quite thoroughly over recent decades are these: individual and normative patterns of physical and motor development; the effects of such factors as race, sex, and body build on development; and the relationship between body build and personality. Much attention has also been directed toward determining the psychological implications of such childhood problems as illness, accidents, physical handicap, malnutrition, and over- and underweight. In fact, the whole area of physical development as related to emotional health has long been recognized.

Many studies have also concerned the relationship between structural and mental characteristics, but correlations have proved too small to be of much significance. For example, Laycock and Caylor (1964) compared the physical measurements of gifted (average IQ 141) and non-gifted (average IQ 109) siblings, but found no significant differences in their physiques. Nor do various types of physical deficiencies relate strongly to mental function. Even the common belief that temporary illness lowers IQ scores appears unjustified. Indeed, only two kinds of physical handicaps have been demonstrated to affect mental function significantly. The first is a defect or disease of the nervous system, such as encephalitis lethargica. The other is a sensory handicap, such as blindness or deafness, that is sufficiently extreme to reduce the child's reception of impressions from the world around him. In general, no physical condition except one that impinges on the central nervous system itself seems to affect seriously intellectual efficiency.

Recently, interest has shifted from the sort of topics just discussed to relationships between mental processes and functions of the physiological and biochemical systems of the body. For instance, Lurie (1938) reported that 20% of a group of problem children demonstrated glandular abnormalities, which, in 10% of the cases, seemed directly related to the child's misbehavior. However, the same apparent cause may result in quite different patterns of behavior. For

example, most children with inadequate thyroid function are sluggish, or listless in behavior; however, a few are destructive and restless. The most probable explanation, concludes Tyler (1965), is that behavioral disorders represent the child's reaction to his perception of his difference from his peers. That is, problem behaviors stem indirectly, rather than directly, from glandular disturbance; and because such reactions are highly individual, little correlation is found between personality and physiological variables.

Efforts to establish a relationship between glandular functioning and mental characteristics are likewise inconclusive. For example, premenarcheal and postmenarcheal girls have demonstrated different interests. But perhaps the difference has stemmed not so much from physiological effects of puberty as from the subjects' own awareness of their respective statuses as children or adolescents.

A major problem in glandular research is this: If extreme glandular dysfunction produces defective characteristics, can it be assumed that milder dysfunction will have correspondingly adverse, though lesser, effects? For example, it has long been known that extreme thyroid deficiency early in life results in cretinism, which is a type of feeblemindedness. However, the evidence concerning older children with less thyroid deficiency is unclear.

The evidence concerning nutritional deficiencies is similarly unclear. There is some evidence that gross dietary deficiencies may adversely affect children's mental function and personality, and that provision of adequate diet may improve the situation. Even adults, whose mental abilities are relatively unaffected by inadequate diet, sustain losses in motivation, at least for some time. However, individual differences in such matters are great and the psychological concomitants of lesser nutritional deficiencies unknown. Nor do we yet know just how many children will be casualties of soft living.

Also of recent concern is biochemical individuality, or the human variability in all organs and systems of the body. The biochemist R. J. Williams directed attention toward this topic with his books *The Human Frontier* (1946), *Free and Unequal* (1953), and *Biochemical Individuality* (1956). In the last of these books, especially, he presented evidence indicating how distinctive people are. In particular, he noted marked individual variation with regard to the composition of body fluids (blood, digestive juices, and so on), the enzyme levels of tissues and body fluids, the pharmacological responses to drugs, and the quantitative needs for particular nutrients, such as amino acids and vitamins. In one study, reported Williams (1956), one individual was unusually sensitive to potassium chloride and showed a predominantly alkaline urinary reaction, while another was sensitive to creatinine and showed an acid urinary reaction. Even when the two were placed on the same diet, some of the difference persisted.

Biological factors in development

Emerging from biochemical research is this general conclusion: that physiological and biochemical reactions help explain the uniqueness of individual personality. The selection by Williams that follows affords a clear analysis of that concept. In some detail, he describes individual differences in biological equipment. And while he acknowledges the significance of environmental influences, he believes that personality stems from complex "biochemical roots."

Let us pass over more briefly other topics of current concern. For example, it seems possible that electrical activity in the brain may relate to personality characteristics—at least, a substantial number of children with behavior problems have abnormal brain waves, many of an epileptiform nature. For the autonomic nervous system as a whole, differences in function have been shown to relate to individual patterns of response. Individual differences in activation or arousal appear especially significant. For instance, fetal activity measured in the eighth or ninth month relates to social

apprehension in nursery-school years (Sontag, 1963). Postnatally, children with low reactivity, as measured by galvanic skin response (GSR), are described as excitable and unstable.

Other topics have been accorded a lesser, but steadily growing emphasis—for example, psychosomatic disorders of childhood; the significance of body image; the effects of radiation on children; and the "catch-up mechanism," which permits the individual's pattern of growth to return to its normal "trajectory" after it has been artificially and temporarily retarded by factors such as disease or malnutrition. Still other topics have yet to be tackled in an imaginative way. For instance, how can the construction of home, school, and playground be so engineered as to ensure not merely statistically normal, but optimum physical and motor development?

The selection by Garn helps one to appreciate the breadth and complexity of physical development and related problems. It is one of the comparatively rare articles within recent years that offers any sort of really provocative treatment of such problems. The coverage is broad, embracing the general pattern of development, the adequacy of growth research, and hazards to growth and development, including hormonal therapy, antibiotics, and drugs designed to prevent abortion. It embraces problems of atypical growth both during the prenatal period and childhood, and special problems affecting growth, such as over- and undernutrition. Dr. Garn is Chairman of the Department of Growth and Genetics of Fels Research Institute and Associate Professor of Anthropology at Antioch College, Ohio.

The next article, by Dr. Jerome Kagan of Harvard University, concerns the relationship of physique and **conceptual impulsivity** in children. The concept that body build relates to personality has been abroad for a long time. We think of the stout person as jolly, the rugged one as truly masculine, and the like. However, most such research has dealt with adult males, little with children or with females. This article is one of the few concerning such studies of children.

The significance of motor development, like that of physical development generally, has long been recognized. Research has been directed toward determining both the developmental sequences in motor skills and the relationship between motor abilities and personal adjustment. Considerable interest has also been shown in the comparative effects of maturation and training on the acquisition of such skills. Illustrative of this research area is the report by Geber who, at the time of this study, was a scientist at the Mulago Hospital in Kampala, Uganda. Geber measured the progress of African infants in terms of Western standards, using Gesell tests of motor development. The performance norms for these tests are based on responses from large numbers of children to simple stimulus objects and sounds. Since these norms proved applicable to both American and Western European children, they became accepted as standard. Some children, it was realized, might pursue the sequence more slowly, but all were presumed to follow the same pattern. However, it was not recognized that development might be speeded up because it was believed that development was forever bound by neurological limitations. However, Geber's article, which reports the relatively rapid development of motor, social, and intellectual abilities of Uganda infants, suggests that such precocity may result primarily from continuous stimulation and responsiveness of the mother. The abrupt change for the infant in this elysian situation is matched by a corresponding deceleration of the infant's progress; and the infant becomes apathetic and withdrawn. Obviously, these observations suggest intriguing possibilities for the care of infants in America, or anywhere else.

The area of physical and motor development is so broad as to make the selection of articles for this area quite arbitrary. In this instance, especially, it is hoped that the student will have recourse to the suggested additional readings.

THE BIOLOGICAL APPROACH TO THE STUDY OF PERSONALITY

ROGER J. WILLIAMS

A biological approach to personality should seek to bring from biology *everything* that can help to explain what personality is, how it originates and how it can be modified and improved. Biology has much to contribute, particularly in an area of biology which has received relatively little attention; namely that involving anatomical, physiological, biochemical (and psychological) individuality.

It seems indefensible to assume that people are built in separate compartments, one anatomical, one physiological, one biochemical, one psychological, and that these compartments are unrelated or only distantly related to each other. Each human being possesses and exhibits unity. Certainly anatomy is basic to physiology and biochemistry, and it may logically be presumed that it is also basic to psychology.

Let us look therefore in the field of anatomy for facts which are pertinent to our problem.

Anatomists, partly for reasons of simplicity, have been prone in centuries past to concentrate on a single picture of the human body. Obvious concessions are made, when necessary, in considering the male and the female of the species, and always anatomists have been aware that within these two groups there are variations and anomalies. Only within the past decade,[1] however, has comprehensive information been published which indicates how great these inter-individual variations are and how widespread they are in the general population.

It makes no difference where we look, whether at the skeletal system, the digestive tract, the muscular system, the circulatory system, the respiratory system, the endocrine system, the nervous system, or even at the microscopic anatomy of the blood, we find tremendous morphological variations within the so-called normal range.

For example, normal stomachs vary greatly in shape, and about six-fold in size. Transverse colons vary widely in the positions at which they cross over in the abdomen, pelvic colon patterns vary widely. Arising from the aortic arch are two, three, four, and sometimes five and six branch arteries; the aorta itself varies greatly in size and hearts differ morphologically and physiologically so that their pumping capacities in healthy young men vary widely. The size of arteries and the branching patterns are such that in each individual the various tissues and organs are supplied with blood unequally well, resulting in a distinctive pattern of blood supply for each.

Morphological differences in the respiratory systems of normal people are basic to the fact that each person exhibits a distinctive breathing pattern as shown in the spirograms of different individuals made under comparable conditions.

Each endocrine gland is subject to wide variation among "normal" individuals. Thyroid glands vary in weight about six-fold,[2a] and the protein-bound iodine of the blood which measures the hormonal output varies to about the same degree.[3] Parathyroid glands also vary about six-fold in total weight in so-called "normal" individuals, and the number of lobes vary from 2–12.[2b] The most prevalent number of lobes is 4, but some anatomists estimate that not over fifty per cent of the population have this number. The number of islets of Langerhans, which are responsible for insulin production, vary over a ten-fold range in diabetes-free individuals.[4] The thickness of the adrenal cortex where the critical adrenal hor-

Abridged from Roger J. Williams, "The Biological Approach to the Study of Personality." Speech given at the Conference on Personality Development, May 5, 1960. Reprinted by permission of the author.

mones arise, is said to vary from 0.5 mm to 5 mm (ten-fold).[5]

The morphology of the pituitary glands which produce about eight different hormones is so variable, when different healthy individuals are compared, as to allow for several fold differences in the production of the individual hormones.[6,7,8] The male sex glands vary in weight from 10 to 45 grams[2c] in so-called "normal" males and much more than this if those with "sub-normal" sex development are included. The female sex glands vary in weight over a five-fold range and the number of primordial ova present at the birth of "normal" female infants varies over a thirteen-fold range.[2d] It is evident that all individuals possess distinctive endocrine systems and that the individual hormonal activities may vary over a several fold range in individuals who have no recognized hormonal difficulty.

The nervous system is, of course, particularly interesting in connection with the personality problem, and the question arises whether substantial variations exist. The classification of the various kinds of sensory nerve endings, for example, is by no means complete nor satisfactory, and the precise functioning of many of the recognized types is unknown. Investigations involving "cold spots," "warm spots," and "pain spots" on the skin indicate that each individual exhibits a distinctive pattern of each. In a relatively recent study of pain spots in twenty-one healthy young adults, a high degree of variation was observed.[9] When subjected to carefully controlled test conditions the right hand of one young man "A" showed seven per cent of the area tested to be "highly sensitive," while in another, "B," the right hand showed one hundred per cent "highly sensitive" areas. On A's hand, forty-nine per cent of the area registered "no pain" under standard pain producing test conditions. On B's hand however there was no area which registered "no pain."

It is evident that there is room for wide variations with respect to the numbers and distributions of sensory nerve endings in different individuals. That such differences exist is indicated by the extreme diversity in the reactions of individuals to many stimuli such as those involving seeing, hearing, and tasting. An entire lecture could easily be devoted to this subject alone.

The branching of the trunk nerves is as distinctive as that of the blood vessels.[1] Anson, for example, shows eight patterns of the branching of the facial nerve, each type representing, on the basis of examination of one hundred facial halves, from 5 to 22 per cent of the specimens. About 15 per cent of people do not have a direct pyramidal nerve tract in the spinal column; an unknown percentage have three splanchnic nerves as compared with the usual two; recurrent laryngeal nerves may be wholly unbranched or may have as many as six branches;[10] the termination of the spinal cord varies in different individuals over a range of three full vertebra.[1]

Variations in brain anatomy have received little attention. Thirteen years ago, however, Lashley in a review wrote:[11] "The brain is extremely variable in every character that has been subjected to measurement. Its diversities of structure within the species are of the same general character as are the differences between related species or even between orders of animals." . . . "Even the limited evidence at hand, however, shows that individuals start life with brains differing enormously in structure; unlike in number, size, and arrangement of neurons as well as in grosser features."

Unfortunately, partly due to the complexity of the problem, there is no information whatever available as to how these enormous anatomical differences are related to the equally striking personality differences which are commonplace. Recently there has been published, primarily for the use of surgeons, an extensive study of differences in brain anatomy.[12]

Up to the present in our discussion we have paid attention only to certain facts of biology—those in the field of

anatomy. Before we consider other areas —physiology, biochemistry, and psychology—it seems appropriate to note whether we have made any progress in uncovering facts that have important implications for personality development.

Consider the fact (I do regard it a fact and not a theory) that every individual person is endowed with a distinctive gastro-intestinal tract, a distinctive circulatory system, a distinctive respiratory system, a distinctive endocrine system, a distinctive nervous system, and a morphologically distinctive brain; furthermore that the differences involved in this distinctiveness are never trifling and often are enormous. Can it be that this fact is inconsequential, in relation to the problem of personality differences?

I am willing to take the position that this fact is of the *utmost* importance. The material in the area of anatomy alone is sufficient to convince anyone who comes upon the problem with an open mind, that here is an obvious frontier which should yield many insights. Those who have accepted the Freudian idea that personality disorders arise from infantile conditioning, will surely be led to see that *in addition,* the distinctive bodily equipment of each individual infant is potentially important.

The failure of psychologists—and of biologists too—to deal seriously with innate individual differences in connection with many problems, probably has deep roots.

McGill has said "Experimental psychologists . . . ignore individual differences almost as an item of faith."[13] The same statement holds, in the main, for physiological psychologists, physiologists, and biochemists. Anatomists have adopted in the past (and some do even at present) the same attitude. Generally speaking, individual differences are flies in the ointment which need to be removed and disregarded. Every subject becomes vastly simpler and more "scientific" when this is done.

If one is pursuing knowledge about personality, however, neglect of innate individual differences is fatal. All of biology and all of psychology have suffered, in my opinion, from at least a mild case of "universalitis," an overruling desire to generalize immediately—oftentimes long before sufficient facts are gathered to give the generalization validity. This desire to generalize is of itself laudable, but the willingness to do so without an adequate background of information is unscientific and has devastating effects in the area of personality study.

The most treacherous type of premature generalization is the one that is not stated, but is merely accepted as obvious or axiomatic. Such a generalization is hidden, for example, in the famous line of Alexander Pope "The proper study of mankind is man." This common saying *assumes* the existence of a meaningful prototype, *man,* a universalized human being—an object of our primary concern. From the standpoint of the serious realistic study of personality, I object to this implied generalization. If we were to alter Pope's line to read "The proper study of mankind is men," we would have detracted from its poetic excellence but we would have added immeasurably to its validity in the area of personality study.

"Universalitis" is probably born of fundamental egotism. If one can make sweeping generalizations, they are self-gratifying, they can be readily passed on to disciples, the atmosphere seems to clear, life becomes simple, and we approach being gods. It is more pleasant often to retain one's conceit than it is to be realistically humble and admit ignorance. "Universalitis" is thus a sign of immaturity. When personality study has grown up it will recognize realistically the tremendous diversity in personalities, the classification of which is extremely difficult and must be based upon far more data than we now have.

With these ideas as additional background for our thinking let us consider some of the other aspects of biology. Physiologically and biochemically distinctiveness in gastro-intestinal tracts is just as marked as is the distinctiveness in

anatomy. The gastric juices of 5,000 individuals free from gastric disease were found to contain from 0–4300 units of pepsin.[14] The range of hydrochloric acid in a smaller study of normal individuals was from 0.0 to 66.0 millequivalents per liter.[15] No one can deny the probability that large variations also exist in the digestive juices which cannot be so readily investigated. Some "normal" hearts beat more than twice as fast as others,[16] some have pumping capacities at least three times as large as others,[17] and the blood of each individual is distinctive. The discovery of the existence of "blood groups" was just the beginning of our knowledge of the individuality of the blood. Enzyme levels in the blood, which are a reflection of fundamental biochemical differences, vary from one well individual to another over substantial ranges, sometimes tenfold or even thirty-fold or more.[18]

Our neuromuscular systems are far from assembly line products as can easily be demonstrated by a study of motor skills and by a large number of physiological tests. Our senses are by no means identical as has been made clear by taste tests for PTC and many other substances,[19] by tests involving sense of smell (verbenas,[20] hydrocyanic acid[21]), sense of sight (peripheral vision, foveal size, flicker fusion, and related phenomena, eighteen types of color "blindness"), sense of balance, pitch discriminations and hearing acuities at different frequencies, etc., etc. From the tremendous variation in the action of specific drugs and chemicals on different individuals, we gain further evidence of fundamental differences in physiology and biochemistry.[22]

Thurston's pioneering work on primary mental abilities called attention to the fact that human minds have different facets, and that some individuals may be relatively well endowed with respect to arithmetical facility, for example, while being relatively deficient in word familiarity or spatial imagery. Others may be strong in the area of word familiarity but weak in rote memory or arithmetic. Guilford has more recently suggested that there are at least forty facets to human minds, involving a group of memory factors, four groups of thinking factors, the latter involving abilities relating to discovering, evaluating and generating ideas.[23] All of this leaves room for a multitude of mental patterns (patterns of conditionability) which it seems reasonable to suppose must be related to the enormous variation in the anatomy of human brains. People, even when confronted with the same facts, do not think alike, and this appears to have a sound anatomical as well as psychological basis.

Those social anthropologists and other social scientists, who regard culture as the one factor which determines what an individual will be like, often say or imply, that adult members of a society bear a very great resemblance to each other because of the similarities of their upbringing. In view of this common implication it may be well to ask whether inborn differentness and distinctiveness fades out as a result of the adjustment of the individuals to the culture to which they are exposed.

That this is not the case is indicated by the results of a game played anonymously with a group of 140 adults. They were given the following list of twenty desirable items each of which was to be rated 0, 1, 2, 3, 4, or 5 depending on its satisfaction-giving value for the individual making the anonymous rating.

1. Animals, pets of all kinds
2. Babies, enjoyment of
3. Bargaining, buying and selling
4. Beauty, as seen through the eyes
5. Conversation, all kinds
6. Creative work
7. Exploring, travel
8. Food, eating of all kinds
9. Gardening
10. Medical Care
11. Music, all kinds
12. Nature, enjoyment of
13. Odors, perfumes, etc.
14. Ownership of property
15. Reading, all kinds
16. Religious worship
17. Routine activities

18. Self adornment
19. Sex
20. Shows, all kinds

The results showed clearly that every individual was distinct and different from every other individual. No two patterns were alike even with respect to a half dozen items; no pattern had a faint resemblance to the average for the group. Furthermore, the distinctiveness of each was not based upon minor differences in ratings; every item on the list was rated 0 by some individuals; every item was rated 5 by some individuals. In fact every item received, by members of this group, every possible rating from 0 to 5!

At the risk of being naive, it appears that the whole story we have been unfolding hangs together. Individual infants are endowed with far-reaching anatomical distinctiveness; each has a distinctive endocrine system, a highly distinctive nervous system, a highly distinctive brain. The same distinctiveness carries over into the sensory and biochemical realms, and into their individual psychologies. It is not surprising therefore that each individual upon reaching adulthood, exhibits a distinctive pattern of likes and dislikes not only with respect to trivialities but also with respect to what may be regarded the most important things in life.

That culture has a profound influence on our lives no one should deny. The serious question arises, however, as to the relative position that different factors occupy in producing distinctive personalities. To me it seems probable that one's distinctive endocrine system and one's distinctive brain morphology are more important factors than the toilet training one receives as an infant.

We cannot state as a demonstrated fact that differences in brain morphology or in endocrine systems have much to do with personality differences. On the other hand we have no rigorous scientific proof that toilet training has any substantial effect on personality development. We can only surmise. In one sense, personality study is in its very early infancy.

Another pertinent question—simple but important—awaits a clear answer: Are patterns of brain morphology inherited? On the basis of what is known about the inheritance of other morphological features including fingerprints and the branching of blood vessels on the chest, etc., it may be *inferred* that specific morphological features in brain are handed down by inheritance, but we do not have definitive proof.

The biological approach to the study of personality

A fact which makes the study of the inheritance of such morphological features difficult is that expressed by geneticists David and Snyder[24] ". . . it has become more and more widely recognized that single-gene differences which produce readily distinguishable discontinuities in phenotype variation are completely non-representative of the bulk of genetic variability in any species." Multiple gene effects are extremely common and in many cases, because of the complexity of the inheritance process, it is impossible to trace them in families or to know when and where such effects may be expected to arise. This complication is not the only one which exists; there is also the possibility (and certainty in some species) of maternal influence (cytoplasmic) which does not follow the rules of gene-centered genetics, and can thus throw one's calculations off.[25]

The complications of broad genetic study are so great that closely inbred animals which, according to the simpler concepts of genetics, should be nearly identical in body make-up, are often relatively far from it. Even within relatively closely inbred groups of animals each has a distinctive pattern of organ weights, a distinctive excretion pattern, and at the same time a distinctive pattern of behavioral responses.

The technique of twin studies also has its pitfalls. **Monozygotic twins** have, according to the simpler concepts of Mendelian genetics, identical inheritance. Actually, however, because of cytoplasmic factors or other unknowns, they appear not to have. It is a common observation that so-called "identical" twins vary markedly in their resemblance to

each other. Sometimes they have almost indistinguishable facial features and very similar temperaments. In other cases, however, they are readily distinguished one from another by facial features and/or by temperaments. Our study of excretion patterns suggest that these show in monozygotic twins a high degree of similarity but not an identity. Kallmann states "Discordance between them [monozygotic twins] is not, as is commonly assumed, a measure merely of postnatal or even prenatal development; it may also have a genetic component."[26]

Consideration of the available facts leads me to suppose, in the absence of completely definitive information, that differences in brain morphology, in endocrine patterns, in digestive, circulatory, muscular and nervous systems, etc., have important roots in heredity. It is difficult to see how such differences as exist could arise independent of heredity. The exact mechanisms whereby all these differences are inherited will probably be obscure many decades hence.

The recognition of hereditary factors does not by any means, exclude from consideration the dynamic aspects of personality development. Potentialities and conditionabilities are inherited; not fixed characteristics. The widespread idea that personalities are developed from early childhood is fully in accord with an appreciation of the hereditary factors. Conditioning still takes place but the recognition of innate biological differences calls attention to distinct make-up that each newborn baby possesses. Conditioning does not take place starting with assembly-line babies, each one, according to Watson, possessing exactly the same potentialities to develop into a "doctor, lawyer, artist, merchant, chief, and yes, even beggar-man and thief."

We have two choices in personality study: one is to neglect hereditary factors as we have done in the past decades, in which case progress will come to a full stop; the other is to recognize the numerous individual differences to be observed in the various areas of biology and study them intensively and ascertain their pertinence.

If we adopt the latter course this means the cultivation of spontaneity in research and perhaps a de-emphasis on theory until some valuable data are collected. Hebb has recently called attention to the weakness of the "design of experiment" approach.[27] "It assumes that the thinking is done in advance of experimentation, since it demands that the whole program be laid out in advance; it tends also in its own Procrustean way, to confirm or deny the ideas with which one began the experiment, but its elaborate mathematical machinery is virtually certain to exclude the kind of unexpected result that gives one new ideas. . . . we must not let our epistomological preconceptions stand in the way of getting research done. We had much better be naive and productive than sophisticated, hypercritical and sterile."

To tackle in one giant undertaking the problem of understanding, characterizing and cataloguing all personalities from the biological or any other point of view, seems hopeless. A strategy which seems far from hopeless, however, involves studying *one at a time* various personality characteristics to ascertain what biological roots they may have. The personality characteristics to be chosen for investigation should, obviously, be as definite as possible. They might include not only matters of temperament or emotion but also the ability to perform specified types of mental processes, or they might include personality problems of numerous types.

Studying even one particular personality characteristic to ascertain its biological roots is a large undertaking and might involve making scores, possibly hundreds, of measurements on every individual subjected to study. If one has some rational basis for selecting wisely the measurements to be made, the number of desirable measurements might be reduced. This fact would constitute an argument for selecting as the "personality problem" to be investigated, one for which the type of

biological roots *might be* successfully guessed in advance. Such might include hyper- or hyposexuality, homosexuality, obesity, depressions, alcoholism, insomnia, accident proneness, etc. When one after another of personality disorders have been studied from this standpoint, it seems very likely that the whole picture will begin to clear and that the study of specific personality characteristics and problems will become successively easier the farther it progresses. What I am considering is obviously a relatively long range proposal.

Such a type of study as I am suggesting is not in line with the vast amount of experimentation which is currently fashionable. It is very common, for example, to develop a measurement and then apply it to large numbers of people. It is almost or totally unheard of to apply a large series of measurements to a relatively few individuals to determine their individual distinctive patterns. This must be done if we are to find the biological roots of personality characteristics, and psychologists should be warned that the major part of the work must be done in the area of biology, and the biological scientists concerned cannot be looked upon as minor contributors.

Digressing for a moment it has been with this thought in mind that I have objected strenuously to the current widespread implication that "behavioral sciences" constitute a distinct group including psychology, sociology, and social anthropology and excluding the biological sciences. Hidden in this classification is the *assumption* that biological factors are of no importance in behavior and that conditioning is the whole story. It actually may well be, however, that anatomy, physiology, and biochemistry are, from the standpoint of their practical potentialities, the most important behavioral sciences at our disposal.

In connection with tracing the biological roots of personality characteristics or problems, a highly important part of the strategy is to recognize what I have elsewhere called "disconformities" in the various measurements that are made.[28] High or low values within the so-called "normal range," for example, are disconformities. Such values are abundant and may be highly meaningful, and more important (because of their wider occurrence) than "abnormalities" especially when, as is often the case, the adopted "norms" are selected arbitrarily and without any rational basis whatever.

One of the most encouraging aspects of this type of study is the potential application of high-speed computers to study biological disconformity patterns, and their pertinence to particular personality characteristics or personality problems. Techniques for studying patterns are in their infancy, but the possibilities are most alluring. It may spur our interest in these possibilities to know that according to recent reports from the Soviet Medical Academy, an electronic diagnosing machine has been constructed. This utilizes, no doubt, some of the mathematical principles and techniques that would be useful in personality study.

Parenthetically, but very briefly, it may be stated that a study of disconformity patterns such as we have suggested is also urgent for reasons other than those involving personality study. These patterns constitute the basis for the complex patterns of innate susceptibilities which all individuals have for all types of diseases.

Time will not permit a discussion of the numerous ways in which my own discipline, biochemistry, impinges on personality problems.[29] The effects of various chemicals on personality behavior, the correlations between brain metabolism and behavior, the effects of various hormones on personality characteristics are all well recognized. What is not so well recognized is that each individual's body chemistry is distinctive and different, and that complex biochemical roots of personality characteristics are likely to be found when we look for them with due care and thoroughness.

Before I close this discussion, I want to stress a most important environmental

factor which is capable of contributing enormously to healthy personality development.

The monumental work of Beadle and Tatum[30] demonstrated for the first time the vital connection between genes and enzymes, and in effect, between heredity and biochemistry. Their work made clear the inevitable basis for individual body chemistry. As a direct consequence of this finding, it becomes inevitable that the nutritional needs of genetically distinctive individuals are quantitatively not the same. Carrying the idea still further it becomes inescapable that the brain cells of individual people do not have quantitatively identical nutritional needs.

It has been amply demonstrated that malnutrition of various kinds can induce personality disorders. This was observed in the starvation studies of Keys and associates,[31] in thiamin deficiency studies,[32] in amino acid deficiency studies[33] and perhaps most notably in pellagra where unequivocal insanity may result from niacin deficiency and can be abolished promptly by administration of the missing vitamin. It has also been shown repeatedly that inadequacy of prenatal nutrition can cause all sorts of developmental difficulties and abnormalities in the growing fetus.

One of the most obvious environmental measures that can be taken to insure favorable personality development, is to see, for example, that the nervous system of each distinctive individual with his distinctive needs, receives prenatally and postnatally the best possible nourishment. Nourishment of brain cells like the nourishment of other cells throughout the body can be maintained at many levels of excellence, and of course achieving the best is no small order.

Serious attention to nutrition which must involve the utilization of substantial manpower and a great deal of human ingenuity and persistence can, I believe, make tremendous contributions to our knowledge of personality states and personality disorders, and to the alleviation and prevention of personality difficulties.

In conclusion I would emphasize that the biological approach to personality, outstandingly important as I believe it to be, is not a substitute for all other valid approaches. Whatever we may know or may be able to accomplish by other approaches, if valid, is not lost. Consideration of the biological approach expands our horizon and gives us a much broader view. In my opinion the insight we may gain from this approach will be most valuable and productive. I should reiterate also what I have said before, that personality study is in its early infancy.

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GROWTH AND DEVELOPMENT

STANLEY M. GARN

From the moment of conception and for more than twenty years the human organism both grows and develops. Shortly after fertilization, when one venturesome sperm successfully penetrates an ovum, there is an increase in the number of cells; that is *growth,* and growth continues well into the third decade. By the time the number of divided cells in the cell-mass reaches sixteen or so, *development* (differential growth) truly begins. Development continues throughout the growing period, and is heightened at the time of sexual maturity.

However many ages William Shakespeare penned for man, there are five distinct stages of growth and development. Each of these stages is unique, self-limiting, and has its own problems both practical and investigative. No one scientist is equipped intellectually or instrumentally to study them all. Few individuals not concerned with growth research are aware of all of the complications. The practical problems of one stage of development often refer back to investigative problems at an earlier stage.

Consider the first trimester, the first three months of gestation, the period during which the embryo comes to look obviously and unquestionably human. This is a period of enormous wastage: at least 3 out of every 10 known conceptions never get beyond the first trimester. Since very early embryonic losses commonly go unnoticed, the true wastage before birth may well be 70 percent of all con-

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ceptions! The first trimester, moreover, is a time of tremendous danger to the embryo: though tiny, its rapidly developing cells are highly susceptible to oxygen-deprivation, toxins, and viral agents. It is during the first trimester that almost all developmental defects—the cleft palates, missing limbs, blindnesses, and monstrosities—we see at birth occur. Possibly a single virus affecting susceptible tissue at a critical horizon results in the association between Mongolism and leukemia. The one bright side of the picture of embryonic wastage and prenatal loss is that the grossest of the defects and the most lethal of the genes never get beyond the first trimester. Thus we are spared untoward numbers of defective individuals and our genetic makeup constantly purifies itself by prenatal attrition.

From the sixth through the ninth month of pregnancy, hazards are fewer and the completion of major stages of development makes the fetus less vulnerable to injury. Yet it is in this time period when neural growth may be set back by environmental insults too mild to yield gross anatomical defects. Nutritional deficiencies during later pregnancy may lead to unsound teeth, jaw-face defects, and disturbances of behavior and personality observable in later life. Extreme prematurity, one of the hazards we have not yet learned to cope with successfully, may in part represent veritable rejects from the maternal womb. Many problems of growth and development during later pregnancy remain to be solved including the causes of physiologic "giantism" of diabetic progeny. As we save the majority of adult diabetics, and carry more and more of them successfully through pregnancy, we see with increasing frequency the peculiar explosive growth of many of their progeny.

Growth during infancy and growth during childhood are facts of life we all know something about. Although we know that children grow, we do not really know why they grow. We do not fully understand the implications of fatness (fat infants do not grow faster, but fat children do). We know a tremendous amount about bone growth, yet we do not know the exact sites of action of many of the hormones and enzymes we have isolated. We know next to nothing about the growth and development of the teeth, indeed, the commonly quoted standards for tooth formation are based on only 25 infant cadavers! While we can measure size and calculate the rate of growth, and compare both to norms, the protein requirements of infants are still to be worked out.

The child moves toward maturity with the secretion of several pituitary hormones that stimulate the gonads to secrete steroid hormones that build muscle, that accelerate and then terminate bone growth, and that bring about the production of mature germ cells. Some of the obvious changes during puberty we all know. In the male, less commonly in the female, there is a period of accelerated growth, sometimes exceeding four inches a year, when the cuffs of the pants shoot upward from the shoelaces to above the ankles, and great quantities of foodstuffs move through the alimentary canal. . . .

The Adequacy of Growth

Quite often a major aim of growth research is to provide norms, standards, charts, and techniques for appraising the adequacy of growth. In many nations where science must be immediately "useful" to command funds, this is too frequently the only task allowed to growth research. Even here, where the pure research of today becomes the applied science of tomorrow, growth research is often construed simply as a search for yardsticks. In a nation dedicated to its children, sincerely interested in offering them every material and psychological advantage, such an attitude is understandable. Who of us does not wish for our children the opportunities for optimum growth? Yet what is "optimum" growth? Poor growth is commonly associated with small size. This is true in

under-nutrition, in protein-deficiency states, in vitamin deficiencies, and as the result of a variety of emotional disturbances. Size, moreover, is easily measured, and can be compared to tables of averages and percentiles for boys and girls of various ages from birth through statural maturity. The big question is *which* table of averages and percentiles?

Children have been getting bigger. The Bowditch tables of a hundred years ago are now historical mementoes. The Baldwin-Wood tables, once the model of their kind, are now hopelessly obsolete (though still furnished gratis by enterprising manufacturers). While up-to-date tables of size-for-age are obviously necessary, and continuing revision of such data justified, there is a tarnished cloud on the silver lining. Since today's norms will be obsolete a decade hence, since they will be uniformly too small like last-year's jeans, is average size-for-age really an indication of the adequacy of growth of a particular child?

As is commonly known, there is a fair relationship between family wealth and children's size. This relationship is a complicated one beginning in prenatal life, and is not just a matter of calories consumed or vitamin pills eaten. On the average, doctors, lawyers, and managers are taller and they have taller children: day-laborers, itinerant workers, and migratory laborers have smaller offspring. Here in America the socio-economic span in children's stature is far less than in Eastern and Middle-Eastern countries. Still, it poses a particular problem—that of which norms to use. In the Middle East this relationship between size and wealth holds potential political dynamite. In our own country, is the "optimum" average the national average, the collegiate average, the lower-class average, or what? If we are to set down norms for Americans, norms to use in growth appraisal, what norms and whose norms ought we to use? Should we use the larger Los Angeles norms, the smaller Boston norms, or compromise on Iowa norms? For the Puerto Rican children in New York, and for other recent immigrants or genetically distinct groups, what are the appropriate norms to employ?

Stature, that is length or height, has the dual advantage of being easily taken, and of being relatively simple to comprehend. However, problems arise with long-legged populations, such as many American colored groups, or with the short-legged Eskimo and Aleut: for such groups "tallness" or "shortness" must be separately interpreted. Weight, moreover, is an excessively complicated measure, and therefore any attempt to utilize weight or to relate weight to height brings in unforeseen variables. As we know now some of the young men rejected from the draft as being "overweight" were actually less fat than the average. They had exceptionally high fat-free weights. There are fat "underweight" children and lean "overweight" children. Without such additional measures as fat-folds, or radiographic measurements of outer fat, the very information we want from weight is too easily lost in the numbers. Overweight or underweight are realistic measures of fatness only at the extremes. In between there is no substitute for measuring fat itself.

One further variable must be added to this section on growth appraisal, and that is maturity status. Neither height nor weight nor amount of stored fat can be adequately interpreted until maturity status is taken into account. At 39 inches tall Johnny may be hopelessly behind in maturity, and Willy surprisingly ahead. At present, the only measure of maturity truly useful from childhood through adolescence is a hand-wrist x-ray. Properly taken the gonadal exposure from such an x-ray is under 0.001 mr, equivalent to a few minutes natural background radiation, that is the amount absorbed in a few minutes of normal living! The information from such a radiograph is not equalled by any other measure we know of now.

It is possible to say that a child is tall or short, in reference to reasonably

appropriate norms. It is also possible to say whether the child is fat or lean, or average, below average or above average in maturity status. The meaning of all of this, however, is quite unknown except at the extremes where the clinician must take charge. Without question, growth can be speeded by stuffing the child, and growth can be slowed by withholding food. Periods of exceptionally slow growth are suspect but beyond this can we actually appraise the adequacy of growth?

With the techniques now at hand, and using the well-to-do as a baseline or reference, it is indeed possible to make growth appraisals in individual children or in populations where growth adequacy is a problem. But for the bulk of American childhood, for the children of tall parents or the taller children of short parents, neat and precise growth appraisals (using charts and graphs) are less effective than the nonmetrical but skilled appraisal of a pediatrician or family doctor who knows both the child and his parents.

The major growth studies of America, at Berkeley, at Denver, at the Fels Research Institute, and at Harvard, and the newer programs in Philadelphia and now Louisville, have accumulated and are accumulating irreplaceable, detailed lifetime growth curves of several thousand children. Numerous patterns of growth can be documented in each of these series. By careful analysis and painstaking reference to the health histories and to the dietary records, these analyses will help us to know just how much growth-appraising we reasonably can do. Until then the evaluation of growth adequacy by measurement, by chart, and by graph remains macroscopic. We can pick out the small child, the thin child, the late-maturing child, and the child who simply fails to grow. The meaning and practical importance of the minor deviations, the statistically atypical growth patterns of apparently still-normal children—these we still have to discover. To succeed, more than a yardstick and a weighing-scale will have to be used, and no copyrighted way of putting height and weight together will make up for the limitations of these two useful, traditional, but still limited measures.

The Problem of Overnutrition

The White House Conference in 1930 coincided with the great depression. The major concern then was with inadequate nutrition. Millions of American children were on short rations both calorie-wise and nutrient-wise. Moreover, as their parents economized on coal, and their clothing became threadbare and thin, caloric expenditures of the body were viciously raised while caloric intake unfortunately diminished.

Today the situation is vastly different. Caloric intake is at an all-time high. Vitamin supplementation is inevitable and unavoidable, even in candy bars and all-day suckers. Homes are hotter, clothing is warm though light. Moreover, many old avenues for caloric expenditure are closed. Two pervasive problems of our decade, obesity and parking, involve the children even more than the adult population. To many pediatricians, overnutrition is a singular concern, and the symposium on overnutrition at the Ninth International Congress of Pediatrics at Montreal in 1959 was packed to standing room.

Exactly what are the effects of overnutrition? Some we know. The fatter the child is, the faster he grows, the earlier he matures, and the sooner he achieves final stature. The fat child, therefore, particularly the fat girl, not only has the temporal disadvantage of being fat (with all of its psychological sequels) but the further disadvantage of being sexually mature in a peer-group of the sexually immature.

Fatness in childhood, moreover, is of more than transitory importance. A recent study has shown that 80 percent of overweight children in one community became overweight adults. A pattern possibly leading to cardio-vascular and renal diseases, and a reduced life expectancy, was thus traceable back to the formative

years. Individuals who were fat in childhood are less susceptible to caloric control as adults. And, today, an increasing proportion of our juvenile population appears to be becoming fat. We should no longer exhibit American height-weight data with unalloyed pride, and we need not compliment ourselves on the earlier age of sexual maturity. This latter accomplishment is beginning to concern some of our school boards, who see a physiological reason for realigning the eighth grade with the high school, and diminishing the length of the junior-high school period.

The reasons for increasing fatness are at least partly comprehensible. The availability of food is one obvious cause. Food supplements, largely sugars, are being doled out to the children by their parents. Chocolate milk-amplifiers under any name are largely flavored corn syrup. Through the stimulation of advertising, tap water is being replaced by sugared juices, milk, and carbonated drinks. Snacks have become a ritualized part of the movies and are inseparably associated with television viewing. Avenues for caloric expenditure are gradually diminishing. In many of our great cities, safe opportunities for strenuous play now scarcely exist. There is room at the curb for father to lather the automobile, but precious little space for tag. As suburbia expands into the denuded suburbs, there are fewer trees to climb, fewer things to do. The car-pool and the school-bus reduce the energy expenditure and the ranch house no longer provides calorie-expending stairs to climb.

These strictures would be strictly academic, if the picture was only of rosy-cheeked and chubby cherubs, but there are dark clouds considerably bigger than a man's body. The general hazards of obesity in adulthood we already know. From mortality data "optimum" weight is already well below "average" weight. Moreover, there is increasing evidence that atherosclerosis, far from being an exclusively adult predisposition, actually begins in childhood. Does earlier maturity lead to earlier demise? Are we eating our way to the cemetery beginning in the perambulator?

Moreover, the American child's diet, once characterized as one big milkshake, comes perilously close to a dietary known to be atherogenic. If 35 percent of his calories come from fats, is junior being prepared starting in nursery school for a coronary occlusion? Reviewing the dietaries of some of our teen-agers, I am struck by the resemblance to the diet that Dr. Olaf Mickelsen uses to create obesity in rats. Frappes, fat-meat hamburgers, bacon-and-mayonnaise sandwiches, followed by ice cream may be good for the farmer, good for the undertaker, and bad for the populace.

Admittedly, we are at a crossroads. From an undernourished past we have succeeded in providing a dietary and a way of life for near-maximum growth. In so doing we may have passed the point of maximum health returns. Can we create a cultural climate in which calories are reduced? Can we make popular the kind of low-fat diet that Irvin Page is developing? And, in fact, is it not our purpose to see beyond childhood? Should we not keep the six-year-old from eating his way into a premature grave at sixty even if it means making life less joyous in the childhood period? Again is it our purpose to emulate Banta's starved water-fleas, and McCance's undernourished rats? They lived longer, but is longevity the primary aim?

Newer Hazards to Growth and Development

In the past forty years much has been accomplished to reduce prenatal wastage, to decrease the proportion of the prematurely born, to pull feeble infants through the hazardous first weeks, and to promote sound bone growth during infancy and childhood. Hormonal therapy and bed rest are both employed in the event of threatened abortion, and a variety of approaches are now used to prevent later but still precipitous entrance into the world. The smallest of the **"premies"** are boxed, warmed, humidi-

fied, and oxygenated. Children of all ages are liberally vitaminized with a well-advertised hand.

Many of the results have been heartwarming indeed. The mortality of the larger "premies" has been so much reduced that the birth of a four-pound or even a three-pound infant is no longer a calamity. Since the days of cod-liver oil, D-deficiency rickets has practically disappeared. However, reduced prenatal human wastage, the disappearance of many vitamin deficiencies, and sound bone growth have not been achieved without certain new hazards. Some of these hazards are currently a real source of concern.

In the event of threatened abortion, certain steroid hormones, namely progesterone and progesterone-like substances are used. Such substances may be routinely prescribed for women with a history of abortion. Related steroids have also been utilized in later pregnancy. There is now mounting evidence that in some proportion of cases, partial sex reversal does result from hormonal therapy. Girl babies have become masculinized *in utero* and some boy babies have become feminized. The whole course of normal postnatal physical and emotional growth has thus been altered by prenatal treatment. The small proportion of cases of sex reversals that occur may be a small danger in comparison to the number of pregnancies that would otherwise have terminated prematurely. But here is one example of a modern measure that returns some portion of evil in return for demonstrable good.

As a result of improved clinical care, including much more prenatal attention, it is now safe for the older woman to bear children. If otherwise healthy, she faces scarcely more danger than a twenty-year-old. Yet no medical care has yet been able to minimize the chances of her bearing a **Mongolian imbecile.** With mounting age the probability of Mongoloid offspring markedly increases. In this year of celebration for Charles Darwin, it is pertinent to remember that Emma Wedgwood Darwin was delivered of a Mongolian imbecile in her fiftieth year. Making it safe to have children later increases the probability of Mongolism. Again we must learn to calculate the risks.

Many authorities are beginning to cast a jaundiced eye at elaborate attempts to retain conceptuses that threaten to abort. They point to the much higher incidence of abnormalities in the early adventurers right up to the seventh and eighth months. A very high proportion of the very prematurely born exhibit malformations. The smaller of the still-viable premies commonly exhibit symptoms of neural damage: evidently their prematurity stems from multiple developmental problems. At what cost does the increased probability of defective development outweigh the desirability of saving the infant? In this instance is there a special danger of telling nature she does not know her own business?

As an example of the influence of technology on normal growth and development, let us consider the incubator. Long used for chickens, the incubator came to be employed for the human infant just about forty years ago. As time progressed, simple boxes heated with hot water bottles became more complex, more automatic, and more efficient. It was possible to provide a high oxygen atmosphere in tightly sealed isolettes and this, as we now know, too often resulted in *retrolental fibroplasia,* a developing blindness resulting from overly high oxygen levels at a critical period in the smallest of the prematures. Obviously, technology outstripped knowledge of developmental anatomy. We are paying now in special schools, and special programs for children who had retrolental fibroplasia a decade and more ago for yet another hazard to normal growth development.

When one thinks of vitamins one does not ordinarily think of possible dangers. In most cases dangerous doses of vitamins are far in excess of the physiological (i.e., useful) dosage. Yet hyper-

vitaminosis-D and hypervitaminosis-A are recurring concerns. Marked abnormalities in bone formation and in growth occur in infants who eat large amounts of fortified butter or oleomargarine a day and in children who are overly indulged by parents engaged in their own private practice of pseudo-medicine. This is not a transient danger, moreover, for some of the self-styled food authorities and prophets of Health-Through-Eating consider vitamins to be cold remedies, intelligence improvers, and food substitutes. With parents who leave insecticides, carbon tetrachloride, arsenic, or strychnine about, health education is a good remedy, but it may also have dangers. Hypervitaminosis, even though resulting from good intentions, is probably an increasing hazard to normal growth and development.

In the past, most of the hazards faced by the child led to retarded growth and delayed development. Today, the availability of synthetic and natural hormones poses a real threat, one frequently resulting in abnormally accelerated sexual development. Children have got hold of stilbesterol intended for animal feeding. They have swallowed their mother's bust-improving pills; they have greased themselves with estrogenic creams. Since sex hormones are increasingly used in the veterinarian's management of pet disorders, the opportunities of eating Fido's pills and kitty's capsules abound. There are reports in the veterinary literature of premature sexual development resulting from ingestion of such substances. The common tendency to use steroid-thyroid "cocktails" in the management of the aged pet pose a further threat. While foods containing residual amounts of stilbesterol do not pose hazards for children, the average home increasingly holds dangers and the possibility of abnormally accelerated development.

While the appearance of antibiotic-resistant strains of bacteria and secondary manifestations of antibiotic sensitivity in children are outside of the scope of this essay, the question of continued antibiotic therapy must be considered in relation to growth development. Pigs, geese, sheep, and cattle grow bigger on antibiotic-supplemented feed. It is questionable however, whether such supplementation is appropriate to the human child. While aureomycin has been used with alleged success in "improving" the growth of children with certain bone disorders, the overall value of such a program remains doubtful. We know that the growth of hogs is improved if tranquilizers are added to their diet, pigs being more skittish and erratic eaters than their reputation has led us to believe. Yet this success at the animal level does not make it safe to use tranquilizers routinely in improving the dietary practices of finicky eaters among our boys and girls. . . .

Progress in any area of human achievement consists of many steps forward and a few steps back. Progress can be measured in terms of the proportion of the newborn that live to maturity. As compared to groups where 2 out of 3 children never reach maturity, the extent of progress in our own country is notable indeed. Our ability to minimize prenatal and neonatal wastage is considerable. It is improving and will improve still further. Yet we must be aware that each step of progress holds with it the possibility of inherent danger, that some proportion of the children saved will ultimately be lost because of the measures used to save them. Moreover, some proportion of the children so saved, though not lost, will be blind or deaf; they will grow abnormally or they will attain sexual development prematurely or even in the wrong direction.

We are now at the point where we can tinker with human growth and development from the very moment of conception right on to early maturity. It would be folly to decry progress or to demand a return to the cruder days when a newborn infant had less than a 50-50 chance of living for one year, and where the probabilities of his growing adequately and well were far smaller than that. We need not be pessimistic. Nevertheless we are building hazards, and it is an appropriate time to take stock of the hazards that exist.

Chapter two

BODY BUILD AND CONCEPTUAL IMPULSIVITY IN CHILDREN

JEROME KAGAN

Interest in the psychological correlates of physique variables has a long and episodic history. Ever since Hippocrates postulated the *habitus phthisicus* and the *habitus apoplecticus,* man has displayed temporary spurts of inquiry into a possible relation between the shape of a person's body and his behavior. In contemporary social science, the decade between 1917 and 1927 produced considerable work on this provocative problem, for it was during this period that Kretschmer postulated the asthenic, athletic, and pyknic body types (Kretschmer, 1925).

A generation later Sheldon (1942) published an essay on physique and temperament, substituting ectomorph, endomorph, and mesomorph for Kretschmer's trio. There was little interest in this area during and immediately after the war, but recently, a generation after Sheldon's work, investigators have once again revealed their basic attraction to this problem. The hardiness of this class of empirical inquiry suggests that the relationship between body shape and behavior is probably not artifactual. In general, the data are more consistent than inconsistent, although associations are often tentative and fragile. The focus of unrest derives from the interpretation of the findings rather than from the raw data. No systematic review of the enormous literature on this problem will be attempted. The reader is referred to Eysenck (1947), Sheldon (1942), and Sanford, Adkins, Muller, and Cobb (1943).

Although there is considerable and heated disagreement over the significance of an association between physique and behavior, the evidence suggests slight positive associations between a build that is short and broad with traits resembling friendliness, moodiness, aggression, and impulsivity, or between a build that is tall and narrow with the traits of introversion, inhibition, and obsession.

Rationale

We did not initially intend to study body build as part of our inquiry into the significance of conceptual reflection-impulsivity, but we were led to it by informal observations that suggested that boys with short-wide body builds tended to be more impulsive on tests with response uncertainty than tall-thin boys. We speculated that the impulsive child might perceive himself as *shorter* than his actual height, and the anxiety created by this belief might have led him to a tendency toward impulsivity. This paper summarizes three independent attempts to assess the relation between conceptual impulsivity, on the one hand, and body build on the other.

Measurements of Reflection-Impulsivity

The **reflection-impulsivity** dimension describes the degree to which a child reflects upon the differential validity of alternative solution hypotheses in situations where many response possibilities

From Jerome Kagan, "Body Build and Conceptual Impulsivity in Children," *Journal of Personality,* Vol. 34 (1966), pp. 118–128. Reprinted by permission of the author and publisher.

are available simultaneously (Kagan, Rosman, Day, Albert, & Phillips, 1964). In these problem situations the children with fast tempos impulsively report the first hypothesis that occurs to them, and this response is typically incorrect. The reflective child, on the other hand, delays a long time before reporting a solution hypothesis and is usually correct. The reflective child considers the alternatives available to him and evaluates their differential validity. The most sensitive test for this variable is a device called Matching Familiar Figures. In this test the child is shown a picture of a familiar object (the standard) and six similar stimuli, only one of which is identical to the standard. Figure 1 illustrates two sample items.

The *S* is asked to select the one stimulus that is identical to the standard. The standard and six variations are always available to the *S*. The major variables scored are numbers of errors and the average response time to the first selection for the 12 test items. There is typically a **negative correlation** (in the sixties) between response time and number of errors. Children who delay before offering their first answer make fewer errors. Moreover, with age, there is a linear increase in response time and a decrease in errors. A child is classified as impulsive if he is above the median on errors and below the median on response time for a large group of children his own age and grade. A reflective child is one whose response times are above the median and his error score below the median.

Study I

Method

A large group of third-grade children was administered the MFF, together with other tests, in a single session by a male or female examiner. Each *S*'s height and chest girth (in inches) were also measured. Three measures of each bodily dimension were taken and the average of the three was the score used in the analyses. *S*s came from two different schools in the same city, with a population of about 50,000. All *S*s were Caucasian and there were no special minority or ethnic groups present in the population. The distributions of height and girth were split at the median for *each sex* and *each school population* separately (four different distributions in all). Each *S* was then categorized as falling into one of four cells: tall and broad, tall and narrow, short and broad, short and narrow.

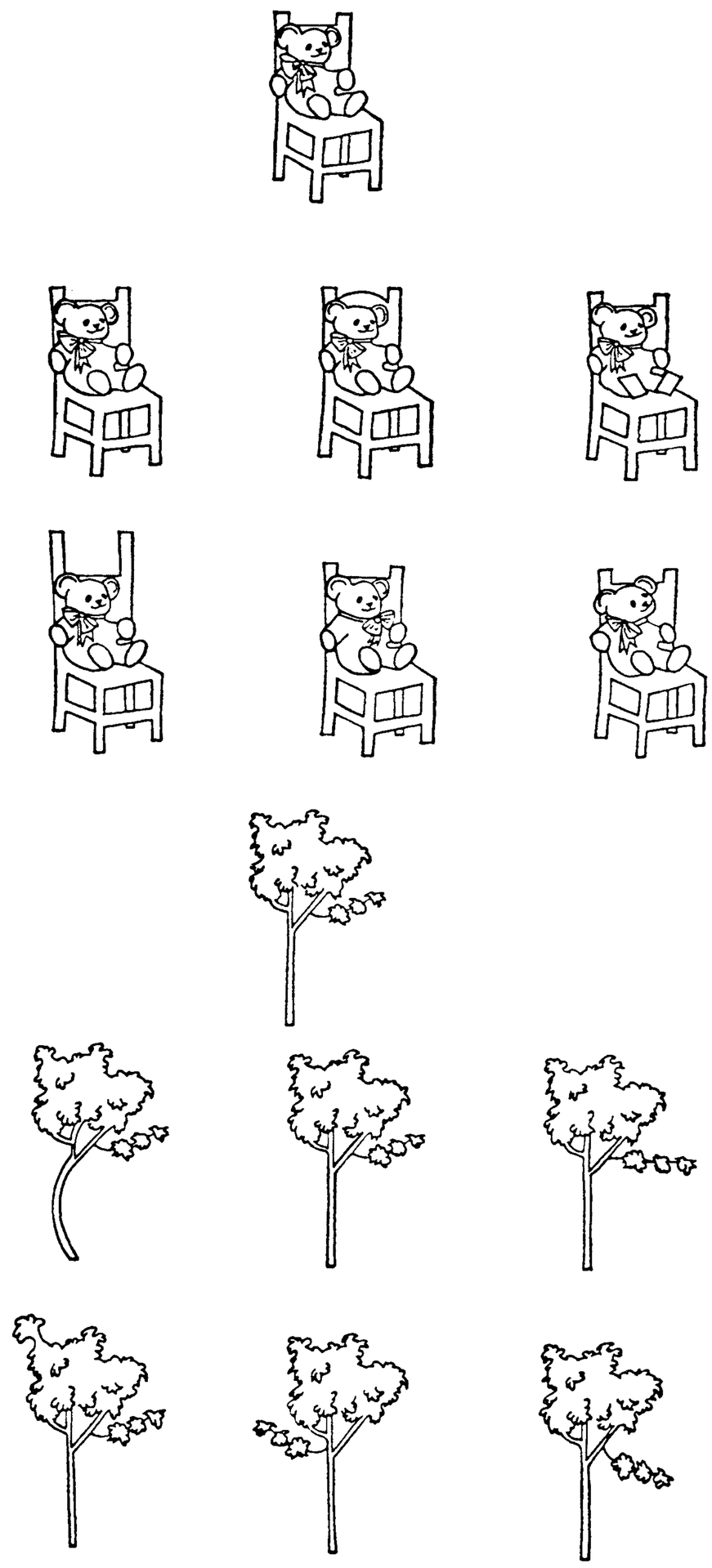

Figure 1. Sample items from Matching Familiar Figures (MFF) test.

Perception of Body Image. Each *S* was shown an array of nine silhouettes that represented nine basic body builds of *S*s between nine and 10 years of age. The silhouettes were of three heights (43, 50, and 58 inches) and three chest girths

(10, 13, and 16 inches). Each height was matched with each girth, yielding a total of nine silhouettes. The *S* was placed 18 inches from the nine randomly arranged silhouettes and asked to select the one that was *most like his own body*.

Each child was classified as reflective or impulsive based on his performance on the Matching Familiar Figures test. The distributions for speed and errors were split at the median; *S*s who were above the median on *speed* and *errors* were classified as impulsive, and *S*s who were below the median on *speed* and *errors* were classified as reflective. This classification yielded 53 reflective boys, 63 impulsive boys, 43 reflective girls, and 39 impulsive girls.

Results

As expected, the boys were slightly taller and broader than the girls. The mean height for the girls was 52.4 inches and the median girth was 13.1 inches. For the boys, mean height was 53.3 inches and mean girth 13.3 inches. Table 1 presents the distribution of the four types of body builds for boys and girls separately and for reflective vs. impulsive children.

TABLE 1. *Distribution of Body Builds for Third-Grade Ss*

	TALL-NARROW	SHORT-BROAD	TALL-BROAD	SHORT-NARROW
Reflective boys	9	0	22	22
Impulsive boys	5	17	21	20
Reflective girls	6	10	13	17
Impulsive girls	6	2	18	13

There was no significant difference between reflective or impulsive children for the two most populous cells—tall-broad and short-narrow. But for the two less frequently occurring body types there was a dramatic difference between reflective and impulsive boys. Nine of the 14 tall-narrow boys were reflective; whereas, not one of the 17 short-broad boys was reflective. This 9-5-0-17 split yielded a p value of less than .001 by Fisher's Exact Test. *Boys who were shorter than their age mates but of slightly greater chest breadth were more likely to be impulsive than reflective.* The boy with a tall and narrow body build was more likely to be reflective.

The results for the girls were of a different character. There was a slight tendency for the shorter girls to be reflective and the taller girls to be impulsive. When the analysis was restricted to the tall-narrow and short-broad groups, a Fisher Exact Test was not significant. When a tall vs. short comparison was made, ignoring chest breadth, the resulting chi-square was short of significance but indicated that short girls were more likely to be reflective than impulsive. It is to be noted that when the *S*'s height and response time on the MFF were coded as continuous variables, there was a negative correlation of $-.21$ ($p < .10$) between response time and height among girls. Among girls, stature was the best correlate of impulsivity; whereas, for boys, the combination of stature and girth was the best predictor of conceptual tempo.

Perception of Body Image

In general, *S*s were relatively accurate in selecting the silhouette that matched their height and girth; the mean differences between actual stature and stature of silhouette hovered around one inch. In order to assess the degree of distortion, each *S*'s actual height and girth were subtracted from the height and girth of the silhouette the *S* chose to represent himself. The mean discrepancies for reflective and impulsive children were compared for each of the four categories of body build.

The impulsive boys were prone to perceive themselves as shorter than reflective boys of similar stature, but the differences in discrepancy scores between reflective and impulsive boys were not significant. In a second analysis the frequency of selection of a silhouette that was five or more inches shorter than the *S*'s actual height or three or more inches taller than *S*'s actual height was tallied. These criterion values represented the top and bottom 10 per cent of the distribution of discrepancy scores. Eleven reflective *S*s and 14 impulsive *S*s (from a total of

109 cases) met one of these criteria. Of the 11 reflectives, seven selected silhouettes taller than themselves and four selected silhouettes shorter. Of the 14 impulsives, only three selected taller silhouettes, while 11 selected shorter silhouettes. This 4-11-7-3 distribution yielded a probability value of less than .05 using Fisher's Exact Test. Thus, when the analysis was limited to extreme distortions in selection of silhouettes, the impulsives perceived themselves as shorter and the reflective boys as taller than their actual statures.

The results for the girls were equivocal. The tall, reflective girls picked silhouettes that were shorter than they were; the short, reflective girls picked silhouettes taller than they were. It appears that the reflective girls selected forms less extreme than their actual statures.

The favored interpretation of these data rests on the assumption that the 10-year-old child is aware of the desirability of specific body types appropriate to his sex. Boys should be tall, girls should be small. The boy who is shorter than his peers is apt to develop feelings of impotence and inadequacy as a result of two related sets of experiences. First, the daily comparison between his height and that of his peers will lead to a negative self-evaluation. The short boy will not be able to reach as high or throw as far as his peers, and these skills are critical for the preadolescent boy. Second, it is likely than the shorter boy will be defeated in fights with age mates and suffer the humiliation and anxiety over potency that are the sequellae of such defects. However, impulsivity is more characteristic of the short boy with a broad chest breadth rather than the short boy with a narrow girth. How can this difference be explained? It is suggested that the two fundamental reactions to anxiety are retreat or retaliation. An impulsive orientation is basically retaliative. The impulsive child does not withdraw from the risks of failure, and he tends to minimize the potential danger associated with risky responses. It is possible that the extra muscle mass possessed by the short-broad boy, in contrast to the short-narrow boy, facilitated the attainment of instrumental successes that the short boy of more fragile build did not attain. At a more speculative level, it is possible that the extra muscle mass is responsible directly for promptings to action that form one base for impulsivity.

The notion that impulsivity springs, in part, from anxiety over adequacy, with body image being an essential component of personal adequacy, is supported by the girls' data. Among girls of this age there is a growing awareness that girls are supposed to be small rather than large. Thus, one might expect impulsive girls to be taller and larger than reflective girls, and the data support this prediction. More of the short girls were reflective, while more impulsive girls were tall and broad.

This argument assumes that boys wish to be tall and girls wish to be small, and additional data support this position. Three to five months after the children were seen for the session in which they selected the silhouettes that best represented them, they were again shown the nine silhouettes and asked to pick the *one they would most like to be*. There was minimal variability in their choices, and there were no differences between reflective and impulsive children. Some 79 per cent of the boys chose the tallest figure, and 21 per cent chose the figure of medium height. Not one boy chose the short silhouettes. This finding supports the previous interpretation that boys value height and place a negative evaluation on short stature. Among the girls there was also a general tendency to value height, for 64 per cent chose the tallest figure, 28 per cent the figure of medium height, and 8 per cent the short figure. There was no difference between impulsive or reflective girls on the silhouette chosen to represent their ideal. Although the girls' modal choice seems to indicate that girls also value height, it is to be noted that there was a significant sex difference in choice of the short and medium figures. Only 21 per cent of the boys chose one

of the two shorter figures in contrast to 37 per cent of the girls (chi square = 7.03; $p < .05$), suggesting a stronger tendency among girls than boys to view small stature as an ideal attribute.

Study II

Replication on Actual Body Build

Additional data support the relation between body build and the reflection-impulsivity dimension. A second study included a group of fourth- and fifth-grade children who had been given the MFF and classified as reflective or impulsive on the basis of their response times and errors. Table 2 shows the distribution of body builds for the reflective and impulsive children.

TABLE 2. *Distribution of Body Builds for Fourth-Grade and Fifth-Grade Children*

	TALL-NARROW	SHORT-BROAD	TALL-BROAD	SHORT-NARROW
Reflective boys	4	1	5	2
Impulsive boys	2	5	3	6
Reflective girls	2	4	5	5
Impulsive girls	4	1	2	2

Once again, the short-broad boys were impulsive and the tall-thin boys reflective. The 4-2-1-5 distribution yielded an exact probability of .12. However when the girth dimension was collapsed and only height considered, 70 per cent of the impulsives were short, whereas only 25 per cent of the reflectives were short ($p < .05$ by exact test). The data for the girls supported the earlier findings. The reflective girls were shorter than the impulsives, but these results were not significant.

Study III

Replication on First Grade Ss

The interpretation of the relation between body size and impulsivity rests primarily on the notion that preadolescent boys have learned anxieties over potency as a result of direct encounters with peers and knowledge of the ideal male physique as presented by the culture. This set of assumptions suggests that this relation may not obtain for younger children (say, ages six to seven), for the six year old is probably not yet aware of the positive value placed on size for males. This assumption was put to test in a final study.

Method

Each of the 155 first-grade children from four different public schools in Newton, Massachusetts, was given the MFF by one of three female examiners. In addition, the height and chest girth of each child was assessed. *S*s were classified as impulsive or reflective using the criteria described earlier. The impulsive child was above the median on errors and below the median on response time, while the reflective child was below the median on errors and above the median on response time. Children were classified into the four basic body types.

TABLE 3. *Distribution of Body Builds for First-Grade Children*

	TALL-NARROW	SHORT-BROAD	TALL-BROAD	SHORT-NARROW
Reflective boys	3	5	14	15
Impulsive boys	7	4	8	12
Reflective girls	5	5	16	6
Impulsive girls	4	5	9	15

Results

Table 3 presents the distribution of body types for reflective and impulsive children, keeping sexes separate. There was no significant association between height or height-girth and reflection-impulsivity for boys. The data for girls were unusual. The reflectives were tall and broad and the impulsives short and narrow, this being the first time such an association occurred.

Summary and Discussion

The most reliable finding was that boys in the third, fourth, or fifth grades who were shorter and broader than their age mates were more likely to be impulsive than reflective. Moreover, impulsive boys in the third grade tended to perceive themselves as shorter than reflective boys of similar bodily proportions.

The suggested interpretation of these data is that the typical boy of ages eight through 10 places a strong positive value

upon height, and the boy who is shorter than his peers is more anxious over his strength and potency (e.g., his ability to defend himself, his ability to compete successfully in gross motor games and skills) than the taller, larger boy of similar social class or mental ability. This anxiety is probably chronic, for a discrepant height is omnipresent during every part of the child's waking day. It was assumed, further, that the boy's defensive reaction to this anxiety depended, in part, on the degree to which he experienced occasional success as a result of attempts to be successful in peer-valued tasks. The short-narrow boy with minimal muscle mass is likely to be least successful, and as a result he is likely to withdraw from this competition. The short-broad boy with more muscle mass is likely to experience occasional success in peer-valued skills, and these reinforcements should help to establish a habit of attempted competitive involvement. The assumptions above lead to the prediction that the short-broad boy is anxious over his potency but predisposed to act in a way that denies or attenuates this anxiety. An impulsive orientation in problems with high response uncertainty is a reasonable reaction to expect from such a boy. The boy is threatened by not being able to supply an answer immediately and is not able to tolerate the time required to select the best possible answer. He must act, for action has been a successful method of gaining success.

The less dramatic and less consistent results for girls agree with the general assumption that body size is not as salient an attribute for the young girl as it is for the boy. However, the older girls' data argue for the importance of congruence between sex-typed body build and reflection. The lack of a relation between body build and reflection among first-grade boys is congruent with the hypothesis that the negative evaluation attached to sex-role standards for stature has not been acquired this early in development.

Alternative Interpretations

It is possible to argue that the relationship between a short-broad build and impulsivity has strong biological correlates over and above the psychodynamic interpretation outlined above. Recent work at the Gesell Clinic by Walker (1962) indicates that preschool children with **mesomorphic** body builds tend to be more aggressive and more active than children with tall-linear builds. It is not likely that children this age would have learned the sex-role association between stature and potency. Thus, the Walker data argue for the possibility of biological variables influencing the association between build and behavior.

Body build and conceptual impulsivity in children

In sum, this report presents still another instance of a relation between body build and behavioral variables. Although the author favors an interpretation based on the assumption of the establishment of attitudes toward the self as a function of body build, it is not possible to rule out completely the possible influence of complex physiological factors that are antecedent to both body build and the behavioral variables.

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Chapter two

THE PSYCHO-MOTOR DEVELOPMENT OF AFRICAN CHILDREN IN THE FIRST YEAR, AND THE INFLUENCE OF MATERNAL BEHAVIOR

MARCELLE GEBER

The starting point of the work to be described was a study of the psychological state of children suffering from the kind of malnutrition known as kwashiorkor made during 1954 in the Medical Research Council's Infantile Malnutrition Unit at Mulago Hospital, Kampala. The disease is most frequently seen in children aged between one and two years and is probably largely due to inadequate diet at the time of weaning.[4]

It was obviously necessary to observe at the same time a group of African children of the same age who were not malnourished, and it was realized at once that these children were precocious in their psychomotor development. Since 1954, the work has been extended by examination of the younger and older siblings of the children seen originally, of other children of all ages (including newborn) up to six years, and of children from various social strata. The children seen at first were of poor and poorly-educated families.[2]

From "The Psycho-Motor Development of African Children in the First Year, and the Influence of Maternal Behavior," *Journal of Social Psychology,* Vol. 47 (1958), pp. 185–186; 194–195. Reprinted by permission of the author and The Journal Press.

The expenses of this investigation have been paid by the Mental Health Section of the World Health Organisation, Geneva, and by the International Children's Centre, Paris. I am grateful to Dr. R. F. A. Dean, Director of the Medical Research Council Unit at Kampala, for making the English translation of my French manuscript.

Paper read before the XVth International Congress in Brussels.

In all, 308 children have been examined by the writer in Uganda. Of these, 51 were tested twice, the second time a year after the first, and 5 three times at yearly intervals. Fifty-four children were seen in their own homes, and the others were seen in the Medical Research Council's building, in dispensaries, or at a nursery school. A further 16 children, 8 to 21 months old, were studied in Johannesburg with the collaboration of the National Institute for Personnel Research under the direction of Dr. S. Biesheuvel, and 30 more under one year in Senegal, in the centers at Dakar under Professor J. Senecal, of the Institut des Hautes Etudes, and at Popenguine under Med. Col. Dr. A. Raoult. The results of the tests on the West African children were discussed with Dr. Solange Faladé, who working at Dakar under Professor Senecal had tested by the same methods another 150 children aged up to two years.[1] The studies in Kampala and Dakar are being carried out as part of the work on growth and development organized by the International Children's Centre, not only in those places but also in London, Stockholm, Paris, and Zurich.

For the newborn children, the method of examination evolved by André Thomas and his colleagues was used.[5] The older children were given Gesell tests, modified in only one way: the child and his mother, and the tester, all sat on the ground. The tests were supplemented by an interrogation of the mothers.

The results of the tests showed an all-round advance of development over European standards which was greater the younger the child. Thus from the first day the child when drawn up into a sitting position, could keep his head from falling back, and held sitting had his back straight. In the first days many children appeared to be able to focus their eyes. At six weeks the child could control his head whatever his position. At four months he could sit alone and at eight months stand without support, at 10 months he could walk, and at 11 months he was able to use his thumb and fore-

finger accurately for picking up small objects. . . . The precocity was not only in motor development; it was found in intellectual development also. It is not always realized that intellectual development is displayed very clearly in the use of the Gesell material. To take an elementary example, the child who merely looks at the cubes and then picks them up is demonstrating a series of intellectual processes, and for the building of a tower with the cubes, more complex processes are needed, in addition to the greater manual dexterity.

Although most of the African children had never seen anything resembling the test material, they used it in the same way as European children and succeeded in the tests earlier than those children. Their interest was lively, and their personal-social relations excellent. They made very good contact with the tester, turning and "talking" to her, smiling at her, and trying in every way to communicate with her.

The development was not entirely homogeneous in all the sections of the tests. Up to the fifth month, the motor precocity was remarkable, especially in regard to posture. Between the fifth and seventh months, adaptivity, language and personal-social relations came to equal the motor development: the level was that of European children two or three months older.

Children examined before and after weaning showed marked difference in their behavior and in the results of their tests. The attitude of the mothers towards the children seemed to be largely responsible for the differences. Before the child is weaned, the mother's whole interest is centered on him. She never leaves him, carries him on her back—often in skin-to-skin contact—wherever she goes, sleeps with him, feeds him on demand at all hours of the day and night, forbids him nothing, and never chides him. He lives in complete satisfaction and security, always under her protection. He is, moreover, continually being stimulated by seeing her at her various occupations and hearing her interminable conversations, and because he is always with her, his world is relatively extensive. He is also the center of interest for neighbors and visitors, to whom he is offered, as a matter of course, as soon as the usual greetings have been exchanged. If, however, he shows the slightest sign of displeasure, he is at once taken back by his mother. During the Gesell tests, the loving and warm behavior of the mothers, always ready to help if help would be valuable, showed very clearly how the children lived surrounded by affection. The mothers' interest in the tests and the detailed answers they gave to the questionary were further evidence of their solicitude.

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Weaning makes a sudden change in the child's life. The mother does not only stop giving him the breast, but often behaves as though she is deliberately trying to effect a separation; inevitably the child becomes miserable and clings to her all the more. Sometimes the separation is geographical, with the child sent for many months to his grandparents and seldom visited. This custom is especially common amongst the lower social classes of the Baganda (the tribe living around Kampala).

It might be argued that the precocity of the child at birth must be a factor of greater importance than the behavior of the mother and the way in which the child was brought up. In our opinion, the precocity, the behavior, and the upbringing are closely related. The arrival of a baby is always looked forward to with great pleasure (sterility is thought to be a calamity) and is not a source of anxiety for the future. The mother is in no way upset by her pregnancy and is active up to the moment of delivery. The unborn child is the chief object of her life, especially as she believes that any other interest may have an adverse affect on him, and as soon as he is born he is not only her constant care but is laid or sat beside her, held up and encouraged to stand, and played with constantly.

A few children who were being brought up in the European way, passing

most of their lives in their cots and fed at regular intervals, made an interesting comparison with the others. They did not show similar precocity after the first month, and later were inclined to be quiet and subdued. On the other hand, children for whom weaning had not caused a sudden break in the way of life retained their liveliness after the weaning, and developed without interruption.

It would be of great interest to increase the number and scope of these comparisons. The placidity of the African woman during pregnancy, and her happy acceptance of motherhood may be related to the slight degree of tonic flexion in her newborn child;[3] it might be found that the African children resembled those of European women who had greatly desired to become mothers, and had learned during pregnancy the methods of relaxation recently introduced into Western countries. An ever-increasing number of African women are adopting European customs and habits, and the effects of the changes should be investigated as fully as possible. In the children of the more sophisticated families, the study of development would undoubtedly be complicated by failures of breast feeding. It is well known that sophistication and ability to breast-feed are apparently becoming incompatible. In all the African mothers seen during the work that has been described, complete failure of breast-feeding had occurred in only two, of whom one had a breast abscess. Even partial failures were rare, and mostly occurred amongst the more wealthy and more intelligent.

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COGNITIVE DEVELOPMENT

Research on cognitive development, which relates to growth and change in such phenomena as thinking, perceiving, imagining, problem solving, and concept formation, is burgeoning. But such has not always been the case. For a time, between World Wars I and II, great interest was shown in intelligence testing and IQ. Intelligence was viewed as relatively constant, and IQ was supposed to sum up all that was worth measuring in intellective function. Then for some years child psychologists seemed more concerned with such matters as personal and social adjustment than with cognition. Aside from measuring mental abilities and applying research findings to school settings, research regarding cognition was largely limited to college students and adults.

However, the entire picture has changed. Much is owed to Jean **Piaget**, the Swiss psychologist who stimulated interest in cognitive processes. Another major factor was Sputnik, which frightened Americans with the possibility that Russia might catch and surpass this country in technology. The "soft" approach in schools was forthwith discarded, and schools were urged to tighten up the curriculum. But the emphasis was not so much on method, as in the past, as on the processes by which learning occurs, and on broader aspects of mental function, such as reasoning and productive thinking. Stress was now on the molar, not the molecular, both in psychological process and behavioral constructs relating to cognition.

Interest was also revived in the relative contributions of heredity and environment to IQ. The role of heredity in intelligence was reappraised, but is still imperfectly understood. Hereditarians, or those who stress the role of heredity, note that significant upward shifts in IQ are infrequently achieved and sustained. They also cite twin data of the last 50 years as consistently suggesting the existence of genes for modifying intelligence. Nevertheless, intelligence is presumed to depend on no one pair of genes or even a selected few, but on special combinations and constellations of several independent genes. It may even be possible to breed selectively for high intelligence since individual genes that in special combinations cause high intelligence may well be present in less effective combinations in the population at large (Caspari, 1968).

Others stress the modifiability of genetic mental potential, citing differences in IQs of monozygotic twins reared together and apart (Erlenmeyer-Kimling & Yarvik, 1963). Among these, J. McVicker Hunt (1961), in the first selected reading, makes a strong case for plasticity of intellect, at least in the early years. Dr. Hunt, who is Professor of Psychology at the University of Illinois, considers the implications of changing ideas about chil-

dren's intellectual development. He says that the now commonly held belief that intelligence is modifiable at once creates a challenge and an opportunity for the schools.

Apparently, heredity and environment collaborate in writing the script for an individual's cognitive destiny. However, to the extent that cognitive function *is* responsive to varying environmental conditions—and this is the current orthodoxy—it becomes essential to establish what those conditions are. Longitudinal studies have begun to yield highly significant data about what constitute adequate foundations of learning. First, evidence confirms the importance of the very early years, suggesting the need for early education. Just how early it should begin and exactly what its content should be are being studied in child development centers in various institutions. Already it appears that crises of mental growth occur in the crib or kindergarten. Such foundations may be quite different superficially from the later functions for which they are, nevertheless, the essential underpinnings.

Another significant point is this: Certain nonintellective factors seem to be critical in determining a child's capacities as a learner. That is, cognitive development is apparently a function of total personality. Thus traits such as conformity and dependency, formerly thought of as distinct from mental function, are now recognized as contributing significantly to it. For example, Witkin and his associates (1962) found that mothers of children who were analytic in their perceptions had given them considerable freedom to explore their environment at an early age. Similarly, Bing (1963) reported that mothers of girls who were good at mathematics and spatial tasks generally left their daughters alone to solve problems by themselves. However, minimum supervision does not mean minimum expectancies.

Illustrative of this sort of research is the selection by Eleanor Maccoby, who is Director of the Laboratory of Human Development at Stanford University, California. Dr. Maccoby relates modes of rearing of girls, as compared with boys, to differences in their intellectual abilities, interests, and overall cognitive development. She questions whether girls might not be reared somewhat differently, in a manner to encourage creative achievement, without sacrificing any essential quality of femininity. In fact, most research into the origins of sexuality, in the psychosocial sense, gives weight to the thesis that differences in cognitive development of the sexes rest largely on an experiential base. Note, however, that the nature-nurture question, as related to differences in mental function, sex, and other factors is not a closed issue (Jones, 1960).

We need a vigorous renewal of the scientific inquiry into the nature-nurture question if we are to capitalize on all the facts of the child's nature (Jensen, 1968). Obviously, many practical matters depend on this. Should a couple be willing to adopt a healthy baby of unknown parentage? Will human intelligence eventually decline if less able segments of the population have higher birth rates? Many problems impede resolution of this issue. For one thing, we are not even agreed on what intelligence means, either theoretically or operationally. The important issues may be the nature of intellectual functioning within individual learners and the implications for the organization of learning experiences once such patterns are identified.

The third selection, by Philip Vernon of the Institute of Education, University of London, is from a long article that deserves reading in its entirety. In this excerpt, Dr. Vernon discusses theories of intelligence testing and describes cross-cultural research in this area. On the basis of available research, he summarizes factors that may modify intelligence.

The contribution by Michael Wallach and Nathan Kogan is indicative of the great interest now being shown in creativity. These investigators report research concerning the much discussed intelli-

gence-creativity distinction and discuss its implications. They distinguish four groups: those high in intelligence but low in creativity, those low in intelligence but high in creativity, those high in both characteristics, and those low in both. Dr. Wallach is Professor of Psychology at Duke University, North Carolina, and Dr. Kogan, Senior Research Psychologist in the Center for Psychological Studies, Educational Testing Service, and a visiting professor in the Department of Psychology, Princeton University.

THE IMPLICATIONS OF CHANGING IDEAS ON HOW CHILDREN DEVELOP INTELLECTUALLY

J. McV. HUNT

The task of maximizing the intellectual potential of our children has acquired new urgency. Two of the top challenges of our day lie behind this urgency. First, the rapidly expanding role of technology, now taking the form of automation, decreases opportunity for persons of limited competence and skills while it increases opportunity for those competent in the use of written language, in mathematics, and in problem solving. Second, the challenge of eliminating racial discrimination requires not only equality of employment opportunity and social recognition for persons of equal competence, but also an equalization of the opportunity to develop that intellectual capacity and skill upon which competence is based.

During most of the past century anyone who entertained the idea of increasing the intellectual capacity of human beings was regarded as an unrealistic "do-gooder." Individuals, classes, and races were considered to be what they were because either God or their inheritance had made them that way, any attempt to raise the intelligence quotient (IQ) through experience met with contempt. Man's nature has not changed since World War II, but some of our conceptions of his nature have been changing rapidly. These changes make sensible the hope that, with improved understanding of early experience, we might counteract some of the worst effects of cultural deprivation and raise substantially the average level of intellectual capacity. This paper will attempt to show how and why these conceptions are changing, and will indicate the implications of these changes for experiments designed to provide corrective early experiences to children and to feed back information on ways of counteracting cultural deprivation.

Changing Beliefs

Fixed Intelligence

The notion of fixed intelligence has roots in Darwin's theory that evolution takes place through the variations in strains and species which enable them to survive to reproduce themselves. Finding in this the implicit assumption that adult characteristics are determined by heredity, Francis Galton, Darwin's younger cousin, reasoned that the improvement of man lies not in education, or euthenics, but in the selection of superior parents for the next generation—in other words, through eugenics. To this end, he founded an anthropometric laboratory to give simple

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sensory and motor tests (which failed, incidentally, to correlate with the qualities in which he was interested), established a eugenics society, and imparted his beliefs to his student, J. McKeen Cattell, who brought the tests to America.

About the same time G. Stanley Hall, an American who without knowing Darwin became an ardent evolutionist, imparted a similar faith in fixed intelligence to his students, among them such future leaders of the intelligence testing movement as H. H. Goddard, F. Kuhlmann, and Lewis Terman.[1] This faith included a belief in the constant intelligence quotient. The **IQ**, originally conceived by the German psychologist Wilhelm Stern, assumes that the rate of intellectual development can be specified by dividing the average age value of the tests passed (mental age) by the chronological age of the child.

The considerable debate over the **constancy of the IQ** might have been avoided if the work of the Danish geneticist Johannsen had been as well known in America as that of Gregor Mendel, who discovered the laws of hereditary transmission. Johannsen distinguished the genotype, which can be known only from the ancestry or progeny of an individual, from the phenotype, which can be directly observed and measured. Although the IQ was commonly treated as if it were a **genotype** (innate capacity), it is in fact a phenotype and, like all **phenotypes** (height, weight, language spoken), is a product of the genotype and the circumstances with which it has interacted.[1]

Johannsen's distinction makes possible the understanding of evidence dissonant with the notion of fixed intelligence. For instance, identical twins (with the same genotype) have been found to show differences in IQ of as much as 24 points when reared apart, and the degree of difference appears to be related to the degree of dissimilarity of the circumstances in which they were reared. Also, several investigators have reported finding substantial improvement in IQ after enrichment of experience, but their critics have attributed this to defects in experimental control.

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When results of various **longitudinal studies** available after World War II showed very low correlation between the preschool IQ and IQ at age 18, the critics responded by questioning the **validity** of the infant tests, even though Nancy Bayley[2] had actually found high correlations among tests given close together in time. Blaming the tests tended to hide the distinction that should have been made between cross-sectional validity and predictive validity: What a child does in the testing situation correlates substantially with what he will do in other situations, but attempting to predict what an IQ will be at age 18 from tests given at ages from birth to 4 years, before the schools have provided at least some standardization of circumstances, is like trying to predict how fast a feather will fall in a hurricane.

Predetermined Development

Three views of embryological and psychological development have held sway in the history of thought: preformationism, predeterminism, and interactionism.[1] As men gave up **preformationism**, the view that the organs and features of adulthood are preformed in the seed, they turned to **predeterminism**, the view that the organs and features of adulthood are hereditarily determined. G. Stanley Hall in emphasizing the concept of **recapitulation**—that the development of the individual summarizes the evolution of his species—drew the predeterministic moral that each behavior pattern manifest in a child is a natural stage with which no one should interfere. The lifework of Arnold Gesell exemplifies the resulting concern with the typical or average that has shaped child psychology during the past half century.

The theory of predetermined development got support from Coghill's finding that frogs and salamanders develop behaviorally as they mature anatomically, from head-end tailward and from inside out, and from Carmichael's finding that

the swimming patterns of frogs and salamanders develop equally well whether inhibited by chloretone in the water or stimulated by vibration. Such findings appeared to generalize to children: The acquisition of such skills as walking, stair climbing, and buttoning cannot be speeded by training or exercise; Hopi children reared on cradleboards learn to walk at the same age as Hopi children reared with arms and legs free.[3]

Again, however, there was dissonant evidence. Although Cruze found that chicks kept in the dark decreased their pecking errors during the first 5 days after hatching—a result consonant with predeterminism—he also found that chicks kept in the dark for 20 days failed to improve their pecking. Moreover, studies of rats and dogs, based on the theorizing of Donald Hebb, suggest that the importance of infantile experience increases up the **phylogenetic** scale.[4]

Evidence that such findings may apply to human beings comes from studies by Goldfarb[5] which indicate that institutional rearing (where the environment is relatively restricted and unresponsive) results in lower intelligence, less ability to sustain a task, and more problems in interpersonal relations than foster-home rearing (where the environment provides more varied experiences and responsiveness). Wayne Dennis[6] has found that in a Teheran orphanage, where changes in ongoing stimulation were minimal, 60 percent of the 2-year-olds could not sit alone and 85 percent of the 4-year-olds could not walk alone. Such a finding dramatizes the great effect preverbal experience can have on even the rate of locomotor development. Presumably the effect on intellectual functions would be even greater.

Static Brain Function

In 1900, when C. Lloyd Morgan and E. L. Thorndike were attempting to explain learning in terms of **stimulus-response bonds**, they used the newly invented telephone as a mechanical model of the brain's operation. Thus they envisioned the brain as a static switchboard through which each stimulus could be connected with a variety of responses, which in turn could become the stimuli for still other responses.

Soon objective stimulus-response methodology produced evidence dissonant with this switchboard model theory, implying some kind of active processes going on between the ears. But it took the programing of electronic computers to clarify the general nature of the requirements for solving logical problems. Newell, Shaw, and Simon[7] describe three major components of these requirements: (1) memories, or information, coded and stored; (2) operations of a logical sort which can act upon the memories; and (3) hierarchically arranged programs of these operations for various purposes. Pribram[8] found a likely place for the brain's equivalents of such components within the intrinsic portions of the cerebrum which have no direct connections with either incoming fibers from the receptors of experience or outgoing fibers to the muscles and glands.

So, the electronic computer supplies a more nearly adequate mechanical model for brain functioning. Thus, experience may be regarded as programing the intrinsic portions of the cerebrum for learning and problem solving, and intellectual capacity at any given time may be conceived as a function of the nature and quality of this programing.[1,9]

As Hebb[4] has pointed out, the portion of the brain directly connected with neither incoming nor outgoing fibers is very small in animals such as frogs and salamanders, whence came most of the evidence supporting the belief in predetermined development. The increasing proportion of the intrinsic portion of the brain in higher animals suggests an anatomic basis for the increasing role of infantile experience in development, as evidenced by the greater effect of rearing on problem solving ability in dogs than in rats.[9] Frogs and salamanders have a relatively higher capacity for regeneration than do mammals. This suggests that the

chemical factors in the genes may have more complete control in these lower forms than they have further up the phylogenic scale.

Motivation by Need, Pain, and Sex

Our conception of motivation is also undergoing change. Although it has long been said that man does not live by bread alone, most behavioral scientists and physiologists have based their theorizing on the assumption that he does. Freud popularized the statement that "all behavior is motivated." He meant motivated by painful stimulation, homeostatic need, and sexual appetite or by acquired motives based on these; and this concept has generally been shared by physiologists and academic behavioral theorists.

Undoubtedly, painful stimulation and homeostatic need motivate all organisms, as sex motivates all mammalian organisms, but the assertion that all behavior is so motivated implies that organisms become quiescent in the absence of painful stimulation, **homeostatic** need, and sexual stimulation. Observation stubbornly indicates that they do not: Young animals and children are most likely to play in the absence of such motivation; young rats, cats, dogs, monkeys, chimpanzees, and humans work for nothing more substantial than the opportunity to perceive, manipulate, or explore novel circumstances. This evidence implies that there must be some additional basis for motivation.

Reflex vs. Feedback

A change in our conception of the functional unit of the nervous system from the reflex arc to the feedback loop helps to suggest the nature of this other motivating mechanism. The conception of the reflex arc has its anatomical foundations in the Bell-Magendie law, based on Bell's discovery of separate **ventral** and **dorsal** roots of the spinal nerves and on Magendie's discovery that the dorsal roots have sensory or "input" functions while the ventral roots have motor or "output" functions. But the Bell-Magendie law was an overgeneralization, for motor fibers have been discovered within the presumably sensory dorsal roots, and sensory fibers have been discovered within the presumably motor ventral roots.

The most important argument against the reflex as the functional unit of the nervous system comes from the direct evidence of feedback in both sensory input and motor output. The neural activity that results when cats are exposed to a tone is markedly reduced when they are exposed to the sight of mice or the smell of fish, thus dramatizing feedback in sensory input. Feedback in motor output is dramatized by evidence that sensory input from the muscle spindles modulates the rate of motor firing to the muscles, thereby controlling the strength of contraction.[9]

Incongruity as Motivation

The feedback loop which constitutes a new conceptual unit of neural function supplies the basis for a new mechanism of motivation. Miller, Galanter, and Pribram[10] have called the feedback loop the Test-Operate-Test-Exit (TOTE) unit. Such a TOTE unit is, in principle, not unlike the room thermostat. The temperature at which the thermostat is set supplies a standard against which the temperature of the room is continually being tested. If the room temperature falls below this standard, the test yields an *incongruity* which starts the furnace to "operate," and it continues to operate until the room temperature has reached this standard. When the test yields *congruity,* the furnace stops operating and the system makes its exit. Similarly, a living organism is free to be otherwise motivated once such a system has made its exit.

Several classes of similarly operating standards can be identified for human beings. One might be described as the "comfort standard" in which incongruity is equivalent to pain. Another consists of those homeostatic standards for hunger (a low of glycogen in the bloodstream) and for thirst (a high level of hydrogen ion concentration within the blood and

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interstitial fluids). A third class, which stretches the concept of incongruity somewhat, is related to sex.

Other standards derive from the organism's informational interaction with the environment. Thus, a fourth class appears to consist of ongoing inputs, and, just as "one never hears the clock until it has stopped," any change in these ongoing inputs brings attention and excitement. Repeated encounters with such changes of input lead to expectations, which constitute a fifth class of standards. A sixth class consists of plans quite independent of painful stimulation, homeostatic need, or sex. Ideals constitute a seventh class.

There is evidence that incongruity with such standards will instigate action and produce excitement.[9] There is also evidence that an optimum of such incongruity exists. Too little produces boredom as it did among McGill students who would remain lying quietly in a room no more than 3 days, although they were paid $20 a day to do so.[9] Too much produces fearful emotional stress, as when a baby chimpanzee sees his keeper in a Halloween mask,[11] a human infant encounters strangers, or primitive men see an eclipse.

While this optimum of incongruity is still not well understood, it seems to involve the matching of incoming information with standards based on information already coded and stored within the cerebrum.[9] Probably only the individual himself can choose a source of input which provides him with an optimum of incongruity. His search for this optimum, however, explains that "growth motivation" which Froebel, the founder of the kindergarten movement, postulated and which John Dewey borrowed; and it may be the basic motivation underlying intellectual growth and the search for knowledge. Such motivation may be characterized as "intrinsic" because it inheres in the organism's informational interaction with the environment.

Emotional vs. Cognitive Experience

Another fundamental change is in the importance attributed to early—and especially very early—preverbal experience. Traditionally, very little significance had been attached to preverbal experience. When consciousness was believed to control conduct, infantile experience, typically not remembered, was regarded as having hardly any effect on adult behavior. Moreover, when development was conceived to be predetermined, infantile experience could have little importance. While Freud[12] believed that preverbal experiences were important, he argued that their importance derived from the instinctive impulses arising from painful stimulation, homeostatic need, and especially pleasure striving, which he saw as sexual in nature.

Freud's work spread the belief that early emotional experiences are important while early cognitive experiences are not. It now appears that the opposite may possibly be more nearly true. Objective studies furnish little evidence that the factors important according to Freud's theory of psychosexual development are significant.[13,14] Even the belief that infants are sensitive organisms readily traumatized by painful stimulation or intense homeostatic need have been questioned as the result of studies involving the shocking of nursling rats.

Rats shocked before weaning are found to be less likely than rats left unmolested in the maternal nest to urinate and defecate in, or to hesitate entering, unfamiliar territory, and more likely to be active there. Moreover, as adults, rats shocked before weaning often require stronger shocks to instigate escape activity than do rats left unmolested; they also show less fixative effect from being shocked at the choice-point in a T-maze.[15] Evidence that children from low socioeconomic and educational classes, who have frequently known painful stimulation, are less likely to be fearful than middle class children, who have seldom known painful stimulation, suggests that the findings of these rat studies may apply to human beings.[16]

While such observations have contradicted the common conception of the

importance of early emotional experience, the experiments stemming from Hebb's theorizing[4] have repeatedly demonstrated the importance of early perceptual and cognitive experience. At earlier phases of development, the variety of circumstances encountered appears to be most important; somewhat later, the responsiveness of the environment to the infant's activities appears to be central; and at a still later phase, the opportunity to understand the causation of mechanical and social relationships seems most significant.

In this connection, a study by Baldwin, Kalhorn, and Breese[17] found that the IQ's of 4- to 7-year-old children tend to increase with time if parental discipline consists of responsive and realistic explanations, but tend to fall if parental discipline consists of nonchalant unresponsiveness or of demands for obedience for its own sake, with painful stimulation as the alternative.

Motor Response and Receptor Input

One more important traditional belief about psychological development which may have to be changed concerns the relative importance of motor response and **receptor** input for the development of the autonomous central processes which mediate intellectual capacity. A century ago, the "apperceptive mass" conceived by Herbart, a German educational psychologist, was regarded as the product of previous perceptual input; and Froebel and **Montessori** both stressed sensory training. However, after World War I, the focus of laboratory learning-studies on response, coupled with the notion of brain function as a static switchboard, gradually shifted the emphasis from the **perceptual** input to the response output. It is hard to make the great importance attributed to the response side jibe with the following findings:

1. Hopi infants reared on cradleboards, where the movements of arms and legs are inhibited during waking hours, learn to walk at the same age as Hopi infants reared with arms and legs free.[3]

2. Eighty-five percent of the 4-year-olds in a Teheran orphanage, where variations in auditory and visual input were extremely limited, did not walk alone.[6]

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Such observations and those of **Piaget**[18,19] suggest that the repeated correction of expectations deriving from perceptual impressions and from **cognitive** accommodations gradually create the central processes mediating the logical operations of thought. Wohlwill[20] and Flavel[21] have assembled evidence which relates the inferential processes of thought to experience and have given this evidence some formal theoretical organization.

Counteracting Cultural Deprivation

The intellectual inferiority apparent among so many children of parents of low educational and socioeconomic status, regardless of race, is already evident by the time they begin kindergarten or first grade at age 5 or 6.[22] Such children are apt to have various linguistic liabilities: limited vocabularies, poor articulation, and syntactical deficiencies that are revealed in the tendency to rely on unusually short sentences with faulty grammar.[23] They also show perceptual deficiences in the sense that they recognize fewer objects and situations than do most middle-class children. And perhaps more important, they usually have fewer interests than do the middle-class children who are the pace setters in the schools. Moreover, the objects recognized by and the interests of children typical of the lower class differ from those of children of the middle class. These deficiencies give such children the poor start which so commonly handicaps them ever after in scholastic competition.

So long as it was assumed that intelligence is fixed and development is predetermined, the intellectual inferiority of children from families of low educational and socioeconomic status had to be considered an unalterable consequence of their genes. With the changes in our conception of man's intellectual development, outlined in the foregoing pages, there emerges a hope of combating such inferiority by altering, for part of their

waking hours, the conditions under which such children develop. The question is "how?"

Clues From Intrinsic Motivation

A tentative answer, worthy at least of investigative demonstration, is suggested by the existence of a change during the preschool years in the nature of what I have called "intrinsic motivation." An approximation of the character of this change has been supplied by the observations which Piaget made on the development of his three children.[18,19,24] At least three stages in the development of intrinsic motivation appear. These may be characteristic of an organism's progressive relationship with any new set of circumstances and seem to be stages in infant development only because the child is encountering so many new sets of circumstances during his first 2 or 3 years.

In the first stage the infant is essentially responsive. He is motivated, of course, by painful stimulation, homeostatic need, and, in Freud's sense, by sex. Russian investigators have shown that the orienting response is ready-made at birth in all mammals, including human beings.[25] Thus, any changes in the ongoing perceptual input will attract attention and excite the infant. During this phase each of the ready-made **sensorimotor** organizations—sucking, looking, listening, vocalizing, grasping, and wiggling—changes, by something like Pavlov's conditioning process, to become coordinated with the others. Thus, something heard becomes something to look at, something to look at becomes something to grasp, and something to grasp becomes something to suck. This phase ends with a "landmark of transition" in which the infant, having repeatedly encountered certain patterns of stimulus change, tries actively to retain or regain them.[24]

During the second stage the infant manifests interest in, and efforts to retain, something newly recognized as familiar—a repeatedly encountered pattern of change in perceptual input. The infant's intentional effort is familiar to anyone who has jounced a child on his knee and then stopped his jouncing only to find the child making a comparable motion, as if to invite the jouncing adult to continue. Regaining the newly recognized activity commonly brings forth such signs of delight as the smile and the laugh, and continued loss brings signs of distress. The effort to retain the newly recognized may well account for the long hours of hand watching and babbling commonly observed during the child's third, fourth, and fifth months. This second stage ends when, with these repeated encounters, the child becomes bored with the familiar and turns his interest to whatever is novel in familiar situations.[24]

The third stage begins with this interest in the novel within a familiar context, which typically becomes noticeable during the last few months of the first year of life. Piaget[18] describes its beginnings with the appearance of throwing, but it probably can be found earlier. While he throws the child intentionally shifts his attention from the act of throwing to the trajectory of the object that he has thrown.

Interest in the novel is also revealed in the infant's increasing development of new plans through an active, creative process of groping, characterized by C. Lloyd Morgan as "trial-and-error." It also shows in the child's increasing attempts to imitate new vocal patterns and gestures.[19,24]

Interest in the new is the infant's basis for "growth motivation." It has also been found in animals, particularly in an experiment in which rats in a figure-eight maze regularly changed their preference to the more complex loop.

Thus Piaget's[18] aphorism, "the more a child has seen and heard, the more he wants to see and hear," may be explained. The more different visual and auditory changes the child encounters during the first stage, the more of these will he recognize with interest during the second stage. The more he recognizes during the

second stage, the more of these will provide novel features to attract him during the third stage.

Effects of Social Environment

Such development prepares the child to go on developing. But continuing development appears to demand a relationship with adults who enable the infant to pursue his locomotor and manipulative intentions and who answer his endless questions of "what's that?", "is it a 'this' or a 'that'?", and "why is it a 'this' or a 'that'?". Without these supports during the second, third, and fourth years of life, a child cannot continue to profit no matter how favorable his circumstances during his first year.

Although we still know far too little about intellectual development to say anything with great confidence, it is unlikely that most infants in families of low **socioeconomic** status suffer great deprivation during their first year. Since one distinguishing feature of poverty is crowding, it is conceivable that an infant may actually encounter a wider variety of visual and auditory inputs in conditions of poverty than in most middle- or upper-class homes. This should facilitate the intellectual development of the infant during his first year.

During the second year, however, crowded living conditions would probably hamper development. As an infant begins to move under his own power, to manipulate things, and to throw things, he is likely to get in the way of adults who are apt already to be ill-tempered from their own discomforts and frustrations. Such situations are dramatized in Lewis's "The Children of Sanchez," an anthropological study of life in poverty.[26] In such an atmosphere, a child's opportunity to carry out the activities required for his locomotor and manipulative development must almost inevitably be sharply curbed.

Moreover, late in his second or early in his third year, after he has developed a number of pseudo-words and achieved the "learning set" that "things have names," the child in a crowded, poverty-stricken family probably meets another obstacle: His questions too seldom bring suitable answers, and too often bring punishment that inhibits further questioning. Moreover, the conditions that originally provided a rich variety of input for the very young infant now supply a paucity of suitable playthings and models for imitation.

The implications of changing ideas on how children develop intellectually

The effects of a lower-class environment on a child's development may become even more serious during his fourth and fifth years. Furthermore, the longer these conditions continue, the more likely the effects are to be lasting. Evidence from animal studies supports this: Tadpoles immobilized with **chloretone** for 8 days are not greatly hampered in the development of their swimming patterns, but immobilization for 13 days leaves their swimming patterns permanently impaired; chicks kept in darkness for as many as 5 days show no apparent defects in their pecking responses, but keeping them in darkness for 8 or more days results in chicks which never learn to peck at all.[1]

Possible Counteracting Measures

Such observations suggest that if nursery schools or day-care centers were arranged for culturally deprived children from age 4—or preferably from age 3—until time for school at 5 or 6 some of the worst effects of their rearing might be substantially reduced.

Counteracting cultural deprivation at this stage of development might best be accomplished by giving the child the opportunity to encounter a wide variety of objects, pictures, and appropriate behavioral models, and by giving him social approval for appropriate behavior. The setting should encourage him to indulge his inclinations to scrutinize and manipulate the new objects as long as he is interested and should provide him with appropriate answers to his questions. Such varied experiences would foster the development of representative imagery

which could then be the referents for spoken words and later for written language.

Children aged 3 and 4 should have the opportunity to hear people speak who provide syntactical models of standard grammar. The behavioral models would lead gradually to interest in pictures, written words, and books. The objects provided and appropriate answers to the "why" questions would lead to interest in understanding the workings of things and the consequences of social conduct. Thus, the child might gradually overcome most of the typical handicaps of his lower-class rearing by the time he enters grade school.

There is a danger, however, in attempting to prescribe a remedy for cultural deprivation at this stage of knowledge. Any specific prescription of objects, pictures, behavioral models, and forms of social reinforcement may fail to provide that attractive degree of incongruity with the impressions which the toddler of the lower class has already coded and stored in the course of his experience. Moreover, what seem to be appropriate behavioral models may merely produce conflict. Therefore, it may be wise to reexamine the educational contributions of Maria Montessori.[27,28] These have been largely forgotten in America, perhaps because they were until recently too dissonant with the dominant notions of motivation and the importance attributed to motor responses in development.

Montessori's contributions are especially interesting, despite some of the rigid orthodoxy that has crept into present-day Montessori practice, because she based her teaching methods on children's spontaneous interest in learning, that is, on "intrinsic motivation." Moreover, she stressed the importance of teachers' observing children to discover what things would most interest them and most foster their growth. Further, she stressed the need to train the perceptual processes, or what we would today call the information processes. The coded information stored in culturally deprived children from lower-class backgrounds differs from that stored in children with middle-class backgrounds. This difference makes it dangerous for middle-class teachers to prescribe intuitively on the basis of their own experiences or of their experiences in teaching middle-class youngsters.

Montessori also broke the lockstep in the education of young children. She made no effort to keep them doing the same thing at the same time. Rather, each child was free to examine and work with whatever happened to interest him, for as long as he liked. It is commonly believed that the activity of preschoolers must be changed every 10 or 15 minutes or the children become bored. But Dorothy Canfield Fisher,[29] the novelist, who spent the winter of 1910–11 at Montessori's Casa de Bambini in Rome, observed that 3-year-olds there commonly remained engrossed in such mundane activities as buttoning and unbuttoning for 2 hours or more at a time. In such a setting the child has an opportunity to find those particular circumstances which match his own particular phase of development and which provide the proper degree of incongruity for intrinsic motivation. This may well have the corollary advantage of making learning fun and the school setting interesting and attractive.

Montessori also included children from 3 to 6 years old in the same group. In view of the changes that occur in intellectual development, this has the advantage of providing younger children with a variety of novel models for imitation while supplying older children with an opportunity to teach, an activity which provides many of its own rewards.

Conclusions

At this stage of history and knowledge, no one can blueprint a program of preschool enrichment that will with certainty be an effective antidote for the cultural deprivation of children. On the other hand, the revolutionary changes taking place in the traditional beliefs about the development of human capacity and motivation make it sensible to hope

that a program of preschool enrichment may ultimately be made effective. The task calls for creative innovations and careful evaluative studies of their effectiveness.

Discoveries of effective innovations will contribute also to the general theory of intellectual development and become significant for the rearing and education of all children. Effective innovations will also help to minimize those racial differences in school achievement which derive from cultural deprivation and so help to remove one stubborn obstacle in the way of racial integration.

Although it is likely that no society has ever made the most of the intellectual potential of its members, the increasing role of technology in our culture demands that we do better than others ever have. To do so we must become more concerned with intellectual development during the preschool years and especially with the effects of cultural deprivation.

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WOMAN'S INTELLECT

ELEANOR E. MACCOBY

The Stanford-Binet intelligence test, which was for many years the most widely used individual test, revealed few differences between boys and girls in total **"intelligence"** as this test measured it. From this fact it was widely assumed that the sexes might differ in interests and in temperament but not in underlying mental abilities. It was not widely known or understood that during the early phases of work on the Stanford-Binet test, when many items were being tried out for possible inclusion in the test, items which consistently revealed sex differences were discarded from the test whenever possible. The test builders hoped in this way to create a test on which the scores for boys and the scores for girls could be evaluated against the same norms. And for the most part they succeeded, although girls did come out slightly ahead in the early years and boys in the middle and later school years (McNemar, 1942). But it is clearly not possible to use a test standardized in this way to investigate the magnitude of the sex differences that do exist or at what ages they make their appearance.

Relying now on test materials which were not standardized so as to eliminate a portion of existing sex differences, we find the following facts: Girls get off to a very good start. Insofar as it is possible to measure abilities which we would be willing to call intellectual abilities during the first three or four years of life, girls seem to be slightly ahead of boys. They articulate more clearly than boys; they say their first word at a slightly younger age on the average; they begin to combine words into sentences slightly sooner; they count accurately sooner (Oetzel, 1962). In interpreting these facts we should remember that performance on the sorts of tests we have been able to devise for very young children does not predict very well what intellectual level the individual will ultimately reach. Furthermore, we know that girls are on a somewhat faster developmental timetable than boys from the standpoint of physical growth; and this same slightly advanced timetable may apply to the maturation of certain motor and perceptual abilities that underlie intellectual performance. Of course this rate of maturation does not necessarily imply anything concerning the ultimate level to be reached.

But to continue with the description

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of sex differences in abilities. Upon entrance into school, girls learn to read a little more easily, and there are more boys who have reading problems severe enough to call for special remedial reading programs. But the differential between the sexes on some aspects of verbal skill soon begins to disappear. During the school years, there are no consistent differences to be found in vocabulary; and after about the fifth or sixth grade, most studies show the boys to be doing as well as the girls in reading comprehension. The girls do continue to excel in "language" skills such as spelling, punctuation, and diagramming sentences. They also excel in measures of "verbal fluency"; for example, they write longer themes; they can think of more words with certain characteristics in a short time; and they can tell longer stories in response to stimulus pictures. So the stereotype that women talk more than men appears to have some basis in fact, but it does not imply a general superiority of the female in all aspects of verbal skill.

How about mathematical skills? It is commonly supposed that men have a consistent edge over women in this respect. It came as a surprise to us, therefore, when we recently reviewed the test results bearing upon mathematical abilities (see Oetzel, 1962), to discover that the sexes do not differ consistently in the early and middle school years. Of course, during much of this time, it may be a misnomer to say that we are dealing with *mathematical* abilities. It would be more accurate to say that the skill usually measured between the ages of seven and eleven or twelve is skill at arithmetical computation. Children are also given some of the so-called arithmetical reasoning problems at these ages—questions about how long would it take three men to dig a basement if seven men can do it in 2½ days, or how long it would take a bullet to travel from one train to another if the speeds of the two trains and the time since starting are given—and girls appear to be able to handle these questions about as well as boys. It is not until high school that we begin to get quite consistent sex differences, with the boys forging ahead when they come to analytic geometry, trigonometry, and algebra and doing considerably better in tests involving quantitative reasoning. By the time the Scholastic Aptitude tests are administered for admission to college, we find that boys score on the average as much as 50 points higher on the mathematical portion of the test, while girls are scoring only 8 to 10 points higher on the verbal, or "language," segment. Of course, girls do not as frequently elect to take the more advanced math courses in high school, and it is difficult to know whether this is true because they lack the ability to handle the material or whether their interests lie elsewhere. The career fields which will require training in mathematics—engineering, and the natural sciences—are primarily masculine fields, and girls may stop taking mathematics simply because they are preparing themselves for more feminine occupations. But another possible explanation exists: that girls may indeed more often lack certain abstract or analytical qualities of mind that are not called into play during the learning of square root, decimals, etc., in the earlier grades, and that it is not until mathematics becomes more abstract (as it does in geometry and algebra) that this particular deficiency becomes a handicap to them.

At the moment, we lack definitive data that would make it possible to choose between these alternatives. But girls' characteristic difficulty with geometry does probably relate to a fairly consistent sex difference that may be detected at a considerably earlier age. Throughout the grade school years, boys do better than girls on tests of "spatial" ability. Some of you may have taken tests which include items for space ability: such tests require the subject, for example, to say how many surfaces there would be on the opposite side of a pile of cubes—the side the viewer cannot see—or to select from an array of jigsaw drawings those that would fit together to form a designated pattern. Another element in spatial ability

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involves finding a simple figure which is embedded in a more complex one. Newspapers sometimes carry drawings of landscapes in which one can find animals or human faces involving lines that are first perceived as parts of clouds, leaves, or tree trunks; the trick in finding these hidden figures is to be able to break away from the set that is established by the entire drawing of the landscape—to respond to only an isolated segment of the drawing and avoid being influenced by the momentarily irrelevant parts. There are formal tests of the ability to perceive parts of a visual field analytically, and the results very consistently show that boys can perceive more analytically, while the girls are more global, more influenced by all the elements of the field together.

Sex differences, to the extent of being bound by the field as a whole, are well illustrated by the relative performance of the two sexes on the so-called rod and frame test, a test used extensively by Witkin in his studies of individual differences in underlying modes of perceiving (Witkin, 1954). In this test, the subject is seated in a darkened room. He looks at an illuminated frame that resembles a picture frame; and within this frame is an illuminated rod, which can be adjusted through various degrees of tilt to an upright position. The subject's task is to adjust the rod so that it looks straight up and down. Sometimes he is required to do this when the frame itself is tilted. Girls are consistently more influenced by the tilt of the frame; they think the rod is upright when it is tilted to correspond to the tilt of the frame rather than when it is truly upright. Boys, on the other hand, are more able to ignore the frame and adjust the rod to the true upright. It is on the basis of tests of this kind, as well as the embedded-figures test, that girls have been labeled more "field dependent" (Witkin, 1954; Witkin, Dyk, Faterson, Goodenough, and Karp, 1962), and it is interesting to note that the greater field dependence of women and girls has been found in studies of people in a variety of cultures, from Western Europe to Hong Kong. It appears entirely possible that some of the difficulty many girls have with the kinds of analytical processes required in high school mathematics could be traced to this earlier-established difference in their mode of dealing with a stimulus field.

Related to the greater field dependence of women is their greater difficulty in breaking an established set. Let me illustrate what is meant by set. Suppose you were asked to solve some number series—to say what would come next in a series of numbers. We would begin with some easy series. For example, we would ask what comes next after 2, 4, 6, 8—and you could easily say 10. Or what comes next after 2, 4, 8, 16, 32—and you would say 64. Now try this one: 14, 23, 34, 42, 50, 59, 72, 81—. Even if you knew New York very well, you would have difficulty recognizing these as the stops on the Eighth Avenue subway, because you were set for an entirely different kind of number series. If you had not had the other series first, you might recognize this series immediately and be able to continue it. There are special test problems which are designed to test an individual's ability to break away from an established set, to restructure a situation for a fresh attack on it, and men do better on such tests than women (Guetzkow, 1951; Sweeney, 1953).

Another kind of task that illustrates the difference between the sexes in their mode of dealing with problem materials is a task developed by Kagan et al. (1963). Subjects are given an array of pictures or drawings showing a variety of objects and people with a variety of postures, modes of dress, and states of activity. The subjects are simply asked to group together the pictures that seem to belong together. Girls are more likely to form what Kagan calls "functional" groupings. For example, they will group together the picture of a doctor, a nurse, and a wheel chair, because they are all associated with the care of sick people. Boys, on the other hand, will be more likely to form groups by selecting out

some detail they have in common—they will, for example, group together all the pictures of people who have their right arms raised. This kind of grouping Kagan calls "analytic" grouping, and the fact that boys do this kind of grouping more may be regarded as another instance of their tendency to break down a percept—to deal with detailed elements rather than the whole.

I would like to suggest, then, that the difficulty girls have with doing high-level work in mathematics and science is only partly a result of the fact that these subjects are required for preparation for engineering and other distinctly masculine occupations; I suggest that girls on the average develop a somewhat different way of handling incoming information—that their thinking is less analytic, more global, and more perseverative—and that this kind of thinking may serve them very well for many kinds of functioning but that it is not the kind of thinking most conducive to high-level intellectual productivity, especially in science. Let me hasten to add that in trying to make this point I may have produced an exaggerated impression of the magnitude of the sex differences that exist. There are many women who think analytically, and many men who do not, but there are consistent differences in the average performance of the two sexes, and by concentrating on the differences we may be able to find some clues as to what underlies the development of intellectual processes in women.

Why do some people develop more analytic modes of thought than others? We are only beginning to make a research attack upon this question. But there do seem to be some consistent trends in the work that has been done so far. The key to the matter seems to lie in whether, and how soon, a child is encouraged to assume initiative, to take responsibility for himself, and to solve problems by himself, rather than rely upon others for the direction of his activities. An early study by David Levy (1943) was among the first to suggest the importance of independence training for certain intellectual functions. He studied a group of boys whom he labeled "overprotected." The behavior of the mothers of these boys was extreme in the direction of "babying" them at a late age—for example, some of the boys, at age ten or eleven, were still being led to school by the hand by their mothers, and their mothers were still dressing them each morning. These overprotected boys were quite good in their language work at school—they were good readers, for example. But they were notably poor at mathematics.

Recently, Dr. Rau and I at Stanford studied a group of children who were good at verbal tasks but poor at mathematics or space tasks and contrasted them with children who were good at mathematics or space but relatively poor at verbal tasks. Dr. Elizabeth Bing observed these children in interaction with their mothers. She asked the mothers to give the children some problems to work on and noted how much the mother became involved as the child worked on the problems. To speak now only about the girls in the study, it was evident from Dr. Bing's reports (Bing, 1963) that the mothers of the highly verbal girls were intrusive: they offered suggestions, praised the child for performing well, and criticized her for performing poorly. The mothers of the girls who were best at mathematics or spatial tasks, however, more often left their daughters alone to solve the problems by themselves.

Still another piece of evidence comes from some recent exploratory work of Witkin, Dyk, Faterson, Goodenough, and Karp (1962), who wished to discover what conditions of a child's life were associated with his being field-dependent versus field-independent on the rod-and-frame test and the embedded-figures test. Witkin interviewed mothers to ascertain their attitudes about child rearing and the methods they had used to raise the particular child whose modes of perceiving Witkin had measured. The mothers of the children who were analytic in their perceptions had given their children quite

a bit of freedom to explore the environment at an early age and had tried to encourage them to do things on their own initiative; by contrast, the mothers of the children who were "field-dependent" in their perceptions had kept their children quite closely tied to the maternal apron strings, had talked to them a good deal about the dangerous aspects of the environment, and had been in general unwilling to tolerate self-assertiveness in their children. There were many other things that characterized these two groups of mothers, as well, and it is difficult to sort out the factors that were most crucial in the home lives of the children with different modes of perceiving. But the relationships that I have selected to report here are consistent with our own findings and those of Levy in suggesting that activities of parents which are designed to foster the independence of their children and encourage them to take initiative will be associated with analytic thinking in the children and good ability in the math-science area, while continued close control and restriction of the child will be associated with the more field-dependent, or global, modes of thinking in the child and *poor* ability in mathematics.

If this is true, we must ask ourselves whether girls are permitted less independence, less self-assertiveness in early childhood than is allowed to boys. We have very little evidence indeed on this point. I know of no evidence that would show that boys are allowed to play outside alone or cross streets earlier than girls, for example, but it may very well be true that they are. At the moment we will simply have to consider it an unanswered question whether parents treat daughters differently from sons with respect to training for independence, and whether they do so to a sufficient degree to account for the differences between the sexes in their modes of perceiving and their differential skill at tasks, such as mathematics, which seem to require an especially high degree of analytical thinking.

I think we can begin to see, however, from what has been said so far, that when we begin to try to understand the intellectual performance of women and girls, we cannot understand them by studying these kinds of performance alone. We will find that intellectual development does not occur as a kind of isolated "unfolding" process obeying its own inner laws, but rather that it is responsive, in some degree, to the nature of the network of interpersonal relations in which the child is involved; and that certain modes of thought may depend on the development of certain aspects of the person that we have previously thought of as "personality" rather than as qualities of intellect.

Let me take another approach to illustrate this point. As you may know, the "intelligence" of an individual child, as it is measured by standard intelligence tests, is not constant over the period of his growth from birth to maturity. Some children show progressive increases in IQ as they grow older; others show a progressive decline. There are a few centers of child development research in this country which have studied groups of children longitudinally; that is, they have followed the same children from very early childhood into adulthood, and it is possible to determine from their data what some of the factors are which are associated with progressive changes in children's intelligence test scores. Sontag and his associates at Fels Research Institute (1958) have selected from their files a group of cases of children whose intelligence test scores consistently improved from preschool years through age ten and contrasted them with a group whose scores consistently declined during this period. They asked these questions: What kinds of children show increases or decreases in IQ? Can one predict, from knowing something about the personality characteristics of young children, which ones will have rising, and which falling, IQs? The answer to the second question is clearly yes. Here is what a child is like at age six if he or she is among those whose IQs will increase during the next four years: he or she is competitive, self-asser-

tive, independent, and dominant in interaction with other children. And the children who will show declining IQs during the next four years are children who are passive, shy, and dependent.

I'm sure it will already have struck you that the characteristics associated with a rising IQ are not very feminine characteristics. One of the people working on the Fels study I have just described was asked about what kind of developmental history was necessary to make a girl into an intellectual person; he replied, "The simplest way to put it is that she must be a tomboy at some point in her childhood."

Does this observation seem bizarre? Before we consider the implications for the raising of girls, let us see whether there is any other evidence, beyond the Fels study, for an association between the sorts of analytic thinking we have been discussing and the possession of non-feminine traits by girls. First of all, if we may consider high ability in arithmetic and mathematics as indicative of analytic skill [and it is known, for example, that skill in mathematics is correlated with ability to find embedded figures while verbal skill is not (see Bieri, 1958)], then it is relevant to refer to a study of the autobiographies of a few famous women mathematicians, done by Plank and Plank (1954). This study revealed that women mathematicians had one important element in common: they all described an unusually close relationship with their fathers, rather than their mothers, as they were growing up, and they attempted to pattern themselves on their fathers. Related to this is the finding of Bieri and his colleagues (1960), who devised measures to determine the degree to which a group of college women had identified with, or patterned themselves upon, each of their parents. They found that women who were especially good at finding the hidden figures in the embedded-figures test were more strongly identified with their fathers than their mothers, while the reverse was true of the women who were relatively poor at solving embedded figures. The women in this study were also given a test designed to measure their acceptance of authority, and the women who were good at solving the embedded-figures problems tended to be *low* in acceptance of authority—another indication of the importance of autonomy in the development of this particular kind of analytic thinking. In still another study (Milton, 1957), college students were given problems to solve, many of which required breaking of set, or "restructuring." For both sexes, the students who were most skillful at problem solving were those who scored at the more masculine end of personality tests designed to measure masculine versus feminine traits.

And finally, our own work at Stanford, in which we selected groups of fifth-grade girls who were especially good at arithmetical or spatial tasks, revealed the following characteristics of these girls: The girls who did better on spatial problems than other kinds of problems were somewhat more masculine and aggressive than other girls with similar total IQs and rather withdrawn from social contact with their age-mates. The girls whose area of greatest competence was numerical tasks were popular with their classmates, largely because they were seen as girls with high competence in planning and organizing. According to their own report, these girls were also less likely than others of similar IQ to ask their parents for help when they encountered difficulty in solving a problem. When the girls were observed in interaction with their mothers, it was the girls who were especially good at verbal tasks who most often asked their mothers for help, while the girls who were best at either math or space tasks tended to work on their own. Thus, we see that the independent group not only were characterized by greater independence while working on problems but also possessed some traits we think of as being more characteristic of boys: aggression in the case of the high-space girls, dominance in the case of the high-number girls.

It would appear, then, that what evidence we have indicates that girls who do well at the various kinds of analytic thinking we have been discussing are not very feminine creatures, at least according to the standards our present society sets for feminine behavior. It has been repeatedly shown, in studies of girls, that they early develop a greater interest in other people, and in what other people think of them, than do boys. They tend to be more influenced by the opinions of others, and are more conforming to what they perceive to be the social demands of the situations they are in. It is probably these conformist tendencies that help them to excel at spelling and punctuation—the kinds of performance for which there is only one socially prescribed, right answer. But for higher-level intellectual productivity, it is independence of mind that is required—the ability to turn one's back on others at least for a time, while working alone on a problem—and it is this which girls, from an early age, appear to find so difficult to do.

But of course, not all girls find it difficult. And it is interesting to consider for a moment the situation of a little girl who at preschool age does have the qualities that could make her into an analytic thinker. She is full of curiosity, likes to explore things, is dominant and independent, probably likes to play with boys and wear blue jeans, and isn't especially interested in dolls. Assuming that her parents have been tolerant of her temperament, what happens when she enters school? One of the first blows is that the boys won't play with her any more—they form their own exclusive play groups, and she must fall back upon the company of girls. In many ways she begins to discover that she is not behaving as girls are expected to behave, and the disapproval she encounters generates a certain amount of anxiety. This may sound like pure speculation, but there is some evidence that this is the course that development does take in girls who start out as tomboys. Sears, in a recent study (1961), traced the development of aggression, and anxiety about aggression, between the ages of five and twelve. The boys who were most anxious about aggression at age twelve were the ones whose parents had not allowed fighting when they were younger, and at the age of five they had already become fairly unaggressive children. The girls who showed most anxiety about aggression at age twelve, however, were the ones who had been fairly aggressive at kindergarten age. But more importantly for our present discussion, the ones who showed the most of this kind of anxiety in middle childhood were the ones who had been trained in ways inappropriate to their sex in preschool years. For example, in most American homes, there is a certain amount of division of labor between the parents such that mothers assume a larger role in the discipline and caretaking of daughters, fathers of sons. But the girls with high aggression anxiety levels in middle childhood had received an unusually high amount of both discipline and caretaking from their *fathers*. Furthermore, they had been encouraged to fight back when attacked by other children in the neighborhood—an encouragement which is more often reserved for boys in our culture. We see, then, that these girls were being to some degree masculinized in early childhood, and we can only assume that it was at least partly the social disapproval they encountered over their unfeminine behavior that produced the anxiety they manifested at a later time.

Let me make a leap from these findings to our present concerns with woman's intellect. Suppose a girl does succeed in maintaining, throughout her childhood years, the qualities of dominance, independence, and active striving that appear to be requisites for good analytic thinking. In so doing, she is defying the conventions concerning what is appropriate behavior for her sex. She may do this successfully, in many ways, but I suggest that it is a rare intellectual woman who will not have paid a price for it: a price in anxiety. And I hazard the guess that it is this anxiety which helps to account for the

lack of productivity among those women who do make intellectual careers. We are beginning to know a good deal about the effects of anxiety on thinking: it is especially damaging to creative thinking, for it narrows the range of solution efforts, interferes with breaking set, and prevents scanning of the whole range of elements open to perception. When anxiety facilitates performance, as it sometimes does, it facilitates already well-learned tasks; it does not contribute to breaking new ground.

From the standpoint of those who want women to become intellectuals, this is something of a horror story. It would appear that even when a woman is suitably endowed intellectually and develops the right temperament and habits of thought to make use of her endowment, she must be fleet of foot indeed to scale the hurdles society has erected for her and to remain a whole and happy person while continuing to follow her intellectual bent.

From the standpoint of parents and educators who are charged with the responsibility of raising and training girls, the requisites for intellectual development in girls appear to pose something of a dilemma. Shall mothers encourage whatever tomboy tendencies they find in their young daughters? Shall teachers attempt to free girls from the emotional involvement with others that helps to make them so tractable in the classroom? I do not mean to imply that the concerted efforts of parents and teachers together would necessarily serve to make girls just like boys intellectually. I think it is quite possible that there are genetic factors that differentiate the two sexes and bear upon their intellectual performance other than what we have thought of as innate "intelligence." For example, there is good reason to believe that boys are innately more aggressive than girls—and I mean aggressive in the broader sense, not just as it implies fighting, but as it implies dominance and initiative as well—and if this quality is one which underlies the later growth of analytic thinking, then boys have an advantage which girls who are endowed with more passive qualities will find difficult to overcome. But it also appears likely that the way children are dealt with by the adults responsible for their care, and the social roles girls know they are preparing themselves for, have a bearing also on whether they will develop the characteristics that will be conducive to the growth of higher-level intellectual skills. And insofar as child training does have an influence, parents and educators have some difficult value judgments to make. What kinds of women do they want to produce? Do we want to encourage intellectuality in women if it must be done at the expense of femininity?

As always, when faced with this kind of devil-and-deep-blue-sea dilemma, it is wise to inquire whether there may not be some other alternative. I wonder whether our current social definition of the feminine woman and girl could not undergo some revisions without any damage to the essential functions of woman. Does a woman really need to be passive and dependent in order to be sexually attractive to men, or in order to be a good mother? Could we not accept and encourage the active, dominant, independent qualities of the intellectual girl without labeling her as masculine, and encourage in her whatever aspects of femininity *are* compatible with an analytic quality of mind? I recognize that I am raising some controversial and intricate issues here, for the social and economic role of woman is by very necessity a dependent one during her childbearing years. But these years have become a much smaller segment of her life span than they once were, and I ask whether our whole definition of femininity should be such as to prepare her for this segment of her life and no other. . . .

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ABILITY FACTORS AND ENVIRONMENTAL INFLUENCES

PHILIP E. VERNON

An enormous amount of research, using very varied approaches, has helped to pinpoint the major environmental handicaps to mental development, and I will try to sketch this briefly under nine main headings.

1. Physiological and nutritional factors. These mainly operate during pregnancy and parturition (cf. Stott, 1960); though certain diseases and malnutrition may also be important later insofar as they lower the energy and activity level that the growing child needs to explore his environment and seek out self-stimulating experiences.

2. Perceptual deprivation in the preschool years is suggested by Piaget's and Hebb's work. This may well operate in such situations as Spitz (1945) and Wayne Dennis (1960) describe, but would hardly seem important in most cultural groups where nature provides plenty of sticks, stones, water, and human contacts. I would rather emphasize conceptual deprivation during the school years when parents fail to answer questions, encourage curiosity, and provide books, TV, and other types of experience (cf. Bloom, 1964).

3. Repression of independence and constructive play, either through overprotection, arbitrary subjection, or conformity to tribal traditions. This is very noticeable in West Indian and African societies, and seems to be linked particularly with deficit in spatial abilities, in 3-dimensional perception (cf. Hudson, 1962), and in

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technical skills. My recent studies with Eskimo boys reveal a strong contrast.

4. Family insecurity and lack of planfulness. In families living at the subsistence level, immediate gratification of hunger and sex needs naturally takes precedence over long-term, purposive planning—the Pleasure Principle over the Reality Principle—and discourages the development of internal controls and rational thinking. In our own culture, Schaefer and Bayley (1963) have shown the ill effects of parental anxiety, irritability, punitiveness, and rejection on later intellectual as well as social traits.

5. Female dominance. In many cultures, including the West Indian though not the Canadian Indian or Eskimo, the father may take little part in child rearing, and there is a lack of masculine models with whom the boy can identify. According to Witkin's (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962; Witkin, Lewis, Hertzmann, Machover, Meissner, & Wapner, 1954) and some other findings, this may favor verbal at the expense of spatial abilities.

6. Education in the underdeveloped countries is often defective, brief or irregular, starved of materials. Teachers may be poorly qualified and they may follow highly formal and mechanical methods, discouraging any intellectual initiative. Yet at the same time even bad education contributes greatly to the development of nonverbal as well as verbal abilities when the average home provides no intellectual stimulation.

7. Linguistic handicaps are almost universal in these societies. There may be a variety of dialects, or a debased and simplified pidgin or Creole; yet English, or sometimes French, is the main medium of instruction, especially for higher education. Unless the child can acquire complete facility in this second language he is likely to be backward in conceptual development and thinking skills, and this too seems to be reflected in nonverbal reasoning as well as in linguistic tests.

8. The conceptual and grammatical structures of the native language may differ markedly from those of English, so that the classifications or relations demanded by a Western-type test may be quite unfamiliar, although the non-Western child can very well classify, relate, and abstract in concrete situations. Again he may never have acquired the ability to interpret pictures as portraying 3-dimensional objects (cf. Biesheuvel, 1952).

9. Adult roles and adolescent aspirations. Here there is little definite evidence. But it is reported of some North American Indian and other cultures that children show fairly normal intellectual development till adolescence, but then, when they realize the depressed status of their minority culture—the absence of opportunity for progress and advancement—apathy sets in. To adapt Gordon Allport's description of personality as "Becoming," intelligence may depend on the future as well as on the past. It is interesting to speculate whether a Western adult does not also cease growing intellectually at 20, 30, 50, or later when he reaches his peak of aspiration and curiosity.

This group of determinants . . . refers to those characteristics of the test which frequently distort the results of unsophisticated testees, and which could be fairly effectively controlled by appropriate modifications of the form of the test and its administration. Schwarz (1961) has laid down a useful series of principles for getting across Western-type tests to African subjects which, in effect, amounts to teaching them the required mode of response before giving the test. I would still question whether any multiple-choice group test such as Schwarz uses, especially any involving time limits, is suitable for cultures with such different modes of thought and such different attitudes to competition, to working on one's own, or to working at speed.[1] Thus I preferred in my own work to rely more on individual,

[1]It is only fair to point out that Schwarz is not concerned with cross-cultural comparisons, but with devising tests which will give useful predictions within African cultures. Thus a speeded test, say, may actually be more predictive of suitability for technical jobs in a culture where speed plays little part in conventional living.

free-response tests, given like the Terman-Merrill, so that one can expand explanations as necessary and try to ensure that motivation is adequate.

While I hope that this summary of determinants and handicaps provides some clarification, the interpretation of cross-cultural data is still extremely tricky, for test results alone tell us little about what determinants are operating in any particular test. Whiting and Whiting (1960) point out that we may be unaware of the crucial parameters in an unfamiliar culture, and Irvine (1965) argues that different sources of variance may be operating: A particular test may be measuring essentially different things in different cultural contexts. For example, amount and quality of schooling may have very little effect on nonverbal tests like Progressive Matrices, Porteus Mazes, or Draw-a-Man in Western cultures, but may have much greater effects in societies where intellectual stimulation by the home is lacking. However one can hope to make some progress: (*a*) by contrasting a number of different cultures, (*b*) by applying factor analysis within each culture to see how the abilities group and what differences occur in factor patterns, (*c*) by obtaining assessments of major determinants within each culture and observing their correlations with the various test scores or factors. . . .

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CREATIVITY AND INTELLIGENCE IN CHILDREN'S THINKING

MICHAEL A. WALLACH AND NATHAN KOGAN

While there has been a great deal of discussion in recent years concerning the importance of fostering **"creativity"** in

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our children, there is little solid evidence to support the claim that creativity can be distinguished from the more familiar concept of **intelligence**. To be sure, the word "creativity" has caught the fancy of the culture—frequent reference is made to creativity in contexts as diverse as education, industry, and advertising. Time and time again, however, the "proof" offered to support the existence of a type of **cognitive** excellence different from general intelligence has proven to be a will-o-the-wisp.

The logical requirements for such a proof can be put as follows. The psychological concept of *intelligence* defines a network of strongly related abilities concerning the retention, transformation, and utilization of verbal and numerical symbols: at issue are a person's memory storage capacities, his skill in solving problems, his dexterity in manipulating and dealing with concepts. The person high in one of these skills will tend to be high in all; the individual who is low in one will tend to be low in all. But what of the psychological concept of *creativity?* If the behavior judged to be indicative of creativity turns up in the same persons who behave in the ways we call "intelligent," then there is no justification for claiming the existence of any kind of cognitive capacity apart from general intelligence. We would have to assert that the notion of greater or lesser degrees of *creativity* in people simply boils down, upon empirical inspection, to the notion of greater or lesser degrees of general *intelligence*. On the other hand, in order to demonstrate that there are grounds for considering creativity to be a kind of cognitive talent that exists in its own right, another kind of proof would be required. It would be necessary to demonstrate that whatever methods of evaluation are utilized to define variations in creativity from person to person result in classifications that are different from those obtained when the same individuals are categorized as to intelligence.

When we reviewed the quantitative research on creativity, we were forced to conclude that these logical requirements were not met. Despite frequent use of the term "creativity" to define a form of talent that was independent of intelligence, examination of the evidence indicated that the purported measures of creativity tended to have little more in common with each other than they had in common with measures of general intelligence. If one could do about the same thing with an **IQ** measure as one could with the creativity measures (regarding who should be considered more creative and who should be considered less creative), it was difficult to defend the practice of invoking a new and glamorous term such as "creativity" for describing the kind of talent under study.

While varying conceptions of the meaning of creativity had been embodied in the measures used, they all shared one thing in common: they had been administered to the persons under study as *tests*. From the viewpoint of the person undergoing assessment, the creativity procedures, no less than an intelligence test, carried the aura of school examinations. They were carried out with explicit or implicit time limits in classroom settings where many students underwent the assessment procedures at the same time. Indeed, we even found that the creativity procedures had been described to the students as "tests" by the psychologists who gave them.

We were suspicious that such a test-like context was inimical to the wholehearted display of cognitive characteristics which could be correctly referred to as being involved in creativity. Hence we believed that creativity had not yet been given a fair chance to reveal itself as a different form of excellence than intelligence. These suspicions were reinforced when we considered what creative artists and scientists have said concerning creative moments in their own work.

Their Creative Elders

In their introspections one finds an emphasis upon the production of a free flow of ideas—the bubbling forth of va-

rieties of associations concerning the matter at hand. Einstein, for example, refers to the need for "combinatory play" and "associative play" in putting ideas together. Dryden describes the process of writing as involving "a confus'd mass of thoughts, tumbling over one another in the dark." Poincaré talks about ideas as having "rose in crowds" immediately prior to his obtaining a significant mathematical insight. These associations, moreover, range with high frequency into the consideration of unique, unusual possibilities, but ones which are nevertheless relevant to the issue rather than just bizarre. When we look into the conditions under which an abundant flow of unique ideational possibilities has been available, the artists and scientists indicate that the most conducive attitude is one of playful contemplation—if you will, of permissiveness. Creative awareness tends to occur when the individual—in a playful manner—entertains a range of possibilities without worry concerning his own personal success or failure and how his self-image will fare in the eyes of others.

With this in mind we formulated a research program that involved the extensive study of 151 fifth-grade children. They were of middle-class socio-economic status, and boys and girls were about equally represented in our sample. The work, which was supported in part by the Cooperative Research Program of the United States Office of Education, has been described in detail in our book, *Modes of Thinking in Young Children: A Study of the Creativity-Intelligence Distinction* (Holt, Rinehart and Winston, 1965).

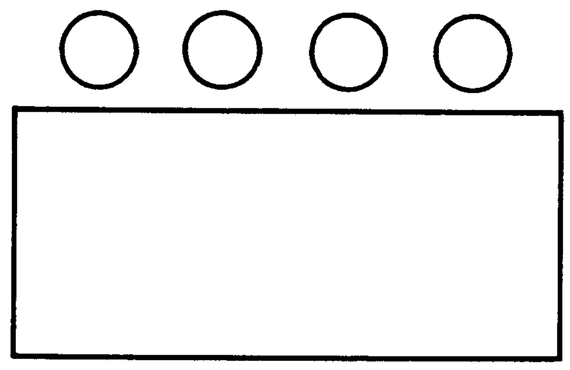
From the introspections of scientists and artists arose some ground rules concerning what creativity might rightfully signify if in fact it constitutes a type of excellence different from intelligence. These ground rules might be put in terms of the following two injunctions:

First, study the flow of ideas—consider how unique and how abundant are the kinds of ideas that a child can provide when contemplating various sorts of tasks. One is talking here, of course, about relevant ideas, not about ideas that might earn the status of being unique only because they are so bizarre as to have no relevance at all to the task.

Second, provide an atmosphere that convinces the child that he is not under test—that the situation is one of play rather than one where his intellectual worthiness is under evaluation by others. This second injunction may be a particularly difficult one to fulfill on the American educational scene, where testing and the feeling of undergoing personal evaluation are ubiquitous. Yet if our considerations were correct, it obviously was essential to fulfill it if creativity was to receive a fighting chance to display itself.

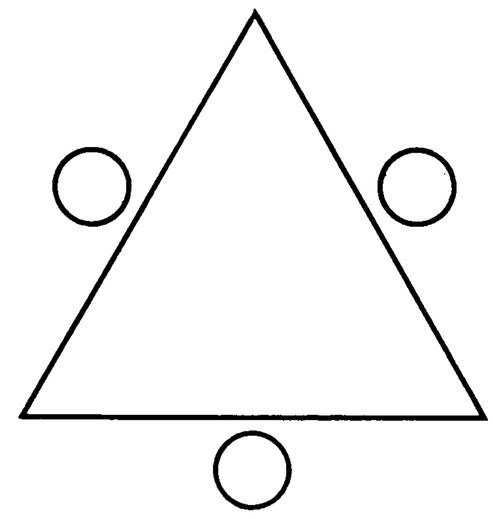
Accordingly, we mustered every device possible to place the assessment procedures in a context of play rather than in the typical context of testing with which the children were all too familiar. There were no time limits on the procedures. They were administered to one child at a time rather than to groups of children seated at their classroom desks. The adults who worked with the children, moreover, had already established relationships in the context of play activities. We even took pains to avoid the customary vocabulary of tests and testing in connection with the research enterprise as a whole—in our talk with the children we described the work as oriented to the study of children's games for purposes of developing new games children would like.

The procedures involved such matters as requesting the child to suggest possible uses for each of several objects, or to describe possible ways in which each of several pairs of objects are similar to each other. For example, in one procedure the child was to suggest all the different ways in which we could use such objects as a newspaper, a cork, a shoe, a chair. "Rip it up if angry" was a unique response for "newspaper," while "make paper hats" was not unique. In another, he was to indicate similarities between, for example, a potato and a carrot, a cat



Left: Unique: "Foot and toes"
Common: "Table with things on top"

Right: Unique: "Three mice eating a piece of cheese"
Common: "Three people sitting around a table"



and a mouse, milk and meat. "They are government-inspected" was a unique response for "milk and meat," while "they come from animals" was not unique. In yet another, he was to indicate all the things that each of a number of abstract drawings might be—such as the drawings shown in the illustrations. For the triangle with three circles around it, "three mice eating a piece of cheese" was a unique response, while "three people sitting around a table" was not unique. For the two half-circles over the line, "two haystacks on a flying carpet" was a unique response, while "two igloos" was not unique.

Our interests were in the *number* of ideas that a child would suggest, and the *uniqueness* of the suggested ideas—the extent to which a given idea in response to a given task belonged to one child alone rather than being an idea that was suggested by other children as well. In addition, we used a variety of traditional techniques for assessing general intelligence with the same children.

When the results of the creativity assessment procedures were compared with the results of the intelligence measures, a definite divergence was obtained —the kind that had not been found in earlier studies. They had already shown, and so did our study, that a child who scores at the high intelligence end of one intelligence test will tend to score that way in other intelligence tests as well. In addition, however, our research revealed two further facts which tended to be different from earlier studies:

The various measures of creativity that we utilized had a great deal in common with one another: a child who scored at the high creativity end of one of our creativity measures tended to score at the high creativity end of all the rest of these measures.

Of particular importance, the indices of creativity and the indices of intelligence tended to be independent of each other. That is to say, a child who was creative by our measures would just as likely be of low intelligence as of high intelligence. Likewise, a child who was relatively low in creativity by our measures would as likely be of high intelligence as of low intelligence.

In short, the obtained facts *did* support the view that in school children creativity is a different type of cognitive excellence than general intelligence. Such an outcome was especially striking in light of the fact that our procedures for assessing creativity of necessity called upon the child's verbal ability in some degree—and verbal ability is known to contribute substantially to performance on IQ tests. Despite this possible source of commonality, the chances that a child of high intelligence would also display high creativity by our measures were no more than about 50-50.

What are some of the characteristics, then, of children in our four categories: intelligent and creative; neither intelligent nor creative; intelligent but low in creativity; and creative but low in regard to intelligence? The composite pictures that emerged from the experiments and observations that we carried out are composites in the sense that some portions of the evidence upon which they are based were more clear for the boys, while other parts of the evidence were more clear for the girls. However, the general pictures

that emerged for the two sexes tended to suggest the same underlying characteristics.

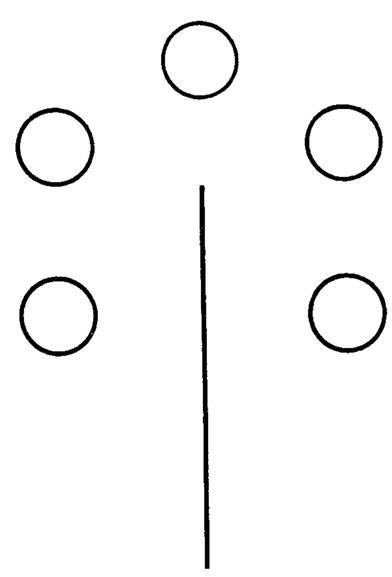
High Creativity—High Intelligence

In many respects these children earn the most superlatives of any of the four groups. For example, when they are observed in the classroom they tend to be particularly high in degree of attention span and concentration upon academic work. At the same time, their academic bent does not put them at a social disadvantage. Quite to the contrary, they are observed to be the most socially "healthy" of the four groups: they have the strongest inclination to be friends with others, and others also have the strongest inclination to be friends with them. (These observations were made during play periods as well as during class sessions.)

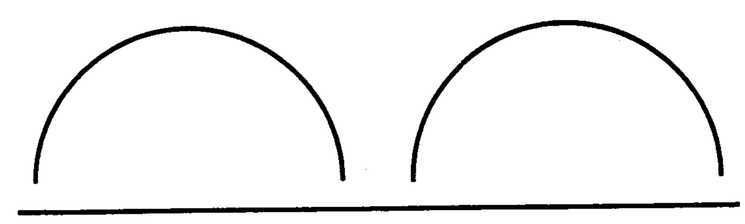
These children, in addition, are the least likely of all four groups to behave in ways that suggest disapproval or doubt concerning oneself, one's actions, and one's work. However, this isn't merely a question of behaving in a manner most in harmony with the society's expectations, for these children also demonstrate a strong inclination to engage in various sorts of disruptive activities in the classroom. It's as if they are bursting through the typical behavioral molds that the society has constructed.

What are some of the underpinnings of the general behaviors just described for this group? For one thing, they are likely to see possible connections between events that do not have too much in common. The members of this group, in other words, are more willing to posit relationships between events that are in many respects dissimilar. For another thing, these children are particularly good at reading the subtle affective or expressive connotations that can be carried by what goes on in the environment. These two matters are not entirely separate—a sensitive, aesthetic "tuning" to the possible expressive meanings conveyed by human gesture or by abstract design forms involves seeing possible linkages between quite different kinds of objects and events. The children high in both creativity and intelligence seemed to be most capable of all the groups regarding this kind of aesthetic sensitivity.

To illustrate how we studied the child's ability to read subtle expressive connotations, consider the following example. We confronted the child with a picture of a straight line and asked him to imagine that he was looking down from above at a path that someone had made. The child was to tell us what sort of person made this trail. Our interest was in determining whether the child's response conveyed information about the kinds of emotional experience that might characterize the person in question, or on the other hand conveyed information only about the superficial character of what the person did. An example of a response showing sensitivity to possible expressive meanings was: "Someone very tense; because if he were relaxed he might wander all over; somebody mad." On the other hand, here is an example of a response that did not show expressive sensitivity: "Man was traveling on a highway; he met people in a huge car; it had a lot of people and it was crowded; they traveled



Left:	Unique:	"Lollipop bursting into pieces"
	Common:	"Flower"
Right:	Unique:	"Two haystacks on a flying carpet"
	Common:	"Two igloos"



together and got food in restaurants; when they got where they were going, they had a nice vacation."

Turning finally to the way these children describe their own feeling states, we find a tendency for them to admit to experiencing some anxiety, some disturbance—neither a great deal nor very little. It may be that experiencing some anxiety serves an energizing function for them: it is not so much anxiety as to cripple them, and not so little anxiety as to leave them dormant. Also, their total mode of adaptation does not minimize the experience of anxiety for them.

Low Creativity—High Intelligence

In what respects are the children who are high with regard to general intelligence but low in creativity different from those who are high in both? Let us return first to behavior observed in classroom and play settings. While the high intelligence-low creativity children resembled the high creativity-high intelligence children in possessing strong capacities for concentration on academic work and a long attention span, in other respects they were quite different. Those of high intelligence but low creativity were least likely of all four groups to engage in disruptive activities in the classroom and tended to hesitate about expressing opinions. In short, these children seemed rather unwilling to take chances.

Parallel behavior was observed in their social relations with other children; while others had a strong inclination to be friends with them, they in turn tended to hold themselves aloof from interaction with other children. The high intelligence-low creativity children, therefore, seemed to be characterized by a coolness or reserve in relations with their peers. Others would seek out the high intelligence-low creativity children for companionship, possibly because of this group's high academic standing. The children in question, however, tended not to seek out others in return. Perhaps this group felt themselves to be on top of the social mountain, as it were—in a position where they could receive homage from others without any need for requital.

The observations regarding a tendency toward caution and reserve on the part of the high intelligence-low creativity children receive further corroboration in other areas of their functioning. For example, when asked to make arrangements and groupings of pictures of everyday objects in whatever ways they considered most suitable, they preferred to make groupings that were more conventional in nature. They tended to avoid making free-wheeling, unconventional arrangements in which there would be greater free play for evolving unique combinations of objects. For instance, a more conventional grouping would be assembling pictures of a lamppost, a door, and a hammer, and calling them "hard objects." A more unconventional grouping, on the other hand, would be putting together pictures of a comb, a lipstick, a watch, a pocketbook, and a door, and describing them as items that concern "getting ready to go out." It is as if a greater fear of error characterizes these children, so that when left to their own devices, they tend to gravitate toward ways of construing the world that are less open to criticism by others.

We also found out that if you *request* these children to try to behave in a manner that involves establishing more free-wheeling linkages among objects, they are capable of doing so. It is not that they lack the ability to look at the world in this manner, but the inclination. When an adult in their environment comes along and makes it clear that they are expected to consider unusual and possibly bizarre ways in which objects can be linked, they are able to conform to this task demand with skill. But most of the time, their environment tells them that the more unconventional ways of proceeding are more likely to lead them into error and be criticized as wrong. Since the possibility of error seems particularly painful to these children, their typical behavior is to proceed in a manner that is less likely, on the average, to bring them criticism.

Another example of the same sort of process is provided when we consider how the high intelligence-low creativity group reads the possible affective meanings that can be possessed by the behavior of others. As in the case of arranging objects into groups, one can contrast more conventional, expected ways and more unconventional, unusual ways of construing what the behavior of others may signify. For example, an angry figure can be described as "angry" with little risk of error. It requires acceptance of unconventional possibilities, on the other hand, for the child to admit the idea that this figure might be "peaceful" or might be "searching." It turns out that the group in question is least likely to entertain the possibility of the more unconventional, unusual kinds of meanings. They seem locked, therefore, in more conventional ways of interpreting their social world as well as their physical world. Again, fear of possible error seems to be at work.

Since the high intelligence-low creativity children seem to behave in a manner that should maximize correctness and minimize error, we can expect them to be in particularly good standing in their classroom environment. Given their apparent tendency to conform to expectations, their mode of functioning should be maximally rewarding and minimally punishing for them. In short, there should be a high degree of fit between customary environmental expectations and their way of conducting themselves. We find, in fact, that this group admits to little anxiety or disturbance when asked to describe their own feeling states. Their self-descriptions indicate the lowest levels of anxiety reported by any of the four creativity-intelligence groups. Since this group behaves in a manner that should minimize worry or concern for them, their minimal level of reported anxiety probably represents an accurate description of how they feel. But at a cost, as we have noted, of functioning in a constricted manner.

High Creativity—Low Intelligence

Turning to the group characterized by high creativity but relatively low intelligence, we find, first of all, that they tend to exhibit disruptive behavior in the classroom. This is about the only respect, however, in which their observable conduct in the usual school and play settings resembles that of the group high in both creativity and intelligence. Of all four groups, the high creativity-low intelligence children are the least able to concentrate and maintain attention in class, the lowest in self-confidence, and the most likely to express the conviction that they are no good. It is as if they are convinced that their case is a hopeless one. Furthermore, they are relatively isolated socially; not only do they avoid contact with other children, but in addition their peers shun them more than any other group. Perhaps, in their social withdrawal, these children are indulging fantasy activities. At any rate, they are relatively alone in the school setting, and in many respects can be characterized as worse off than the group low in both creativity and intelligence.

It should be borne in mind that the high creativity-low intelligence children nevertheless give evidence of the same kind of creative thinking capacities as are found in the high creativity-high intelligence group. Again, for example, we find a greater likelihood of seeing possible connections between events that do not share much in common. The high creativity children, whether high or low regarding intelligence, are more willing to postulate relationships between somewhat dissimilar events.

Apparently, the kinds of evaluational pressures present in the case of intelligence and achievement testing as well as in the typical classroom environment serve to disrupt cognitive powers which can come to the fore when pressure is reduced. An interesting complementarity seems to exist with regard to the psychological situations found for the high creativity-low intelligence group and the low creativity-high intelligence group: while members of the former seem to perform more effectively when evaluational

pressures are absent, members of the latter seem to work more adequately when evaluational pressures are present. It is as if the former children tend to go to pieces if questions of personal competence and achievement enter the picture, while the latter children have difficulty if they are denied a framework of standards within which they can evaluate what is required of them if they are to seem competent in the eyes of adults.

Low Creativity—Low Intelligence

While the children in this group show the greatest cognitive deprivation of the four groups under study, they seem to make up for it at least to some degree in the social sphere. From observations of their behavior in school and at play they are found to be more extroverted socially, less hesitant, and more self-confident and self-assured than the children of low intelligence but high creativity. The members of the low-low group are particularly poor regarding the kinds of aesthetic sensitivity that were mentioned earlier—for example, they show the weakest tendencies to respond to the possible expressive meanings that abstract line forms may convey. Despite such deficiences, however, this group does not seem to be the maximally disadvantaged group in the classroom. Rather, the low-low children seem to have worked out a *modus vivendi* that puts them at greater social ease in the school situation than is the case for their high creativity-low intelligence peers.

The Motivational Hurdle

Now that we have characterized the four groups of children, let us finally consider the implications of the relative roles played by ability and by motivational factors in a child's thinking. The only group that looks like it is in difficulty with regard to ability—and even in their case we cannot be sure—is the group low in both intelligence and creativity. In the cases of the two groups that are low regarding one cognitive skill and high regarding the other—the low intelligence-high creativity group and the high intelligence-low creativity group—our evidence suggests that, rather than an ability deficiency, the children in question are handicapped by particular motivational dispositions receiving strong environmental support. For the low intelligence-high creativity children, the difficulty seems to concern excessive fear of being evaluated; hence they perform poorly when evaluational standards are a prominent part of the setting. For the high intelligence-low creativity children, on the other hand, the difficulty seems to concern a fear of not knowing whether one is thought well of by significant others. The possibility of making mistakes, therefore, is particularly avoided. Further, if evaluational standards are not a clear part of the setting, so that the child does not know a right way of behaving in order to fulfill the expectations of others, performance will deteriorate because the problem of avoiding error becomes of prime importance.

In theory, at least, these kinds of motivational hindrances could be rectified by appropriate training procedures. If one could induce the low intelligence-high creativity children to be less concerned when evaluational standards are present, and the high intelligence-low creativity children to be less concerned when evaluational standards are absent, their thinking behavior might come to display high levels of both intelligence and creativity.

SUGGESTIONS FOR FURTHER READING

Bayley, N., "On the Growth of Intelligence," *American Psychologist,* **10** (1955), pp. 805–818. Outlines overall design of intellectual functioning in broad perspective. Reports a break between the kinds of intellectual functions of infancy and school, measured in infancy and school years.

Bayley, N., "Behavioral Correlates of Mental Growth: Birth to Thirty-Six Years," *American Psychologist,* Vol. 23, No. 1 (January 1968), pp. 1–17. This report, based on the accumulated records of the Berkeley Growth Study, concerns mental growth and its relationship to expressed emotions, attitudes, and characteristic reaction tendencies.

Bower, T. G. R., "The Visual World of Infants," *Scientific American,* Vol. 215, No. 6 (1966), pp. 80–92. A readable report of research on the way infants see their world.

Bruner, J. S., et al., *Studies in Cognitive Growth* (New York: John Wiley & Sons, 1966). In the first two chapters and in the last, elements of a theory of **cognitive** development are summarized. The middle ten chapters contain empirical studies of children's cognitive development in various settings, including New England, Mexico, and Alaska.

Fantz, R. L., "The Origin of Form Perception," *Scientific American,* Vol. 204, No. 5 (1961), pp. 66–72. Presents evidence that a child's original perceptions are part of his genetic inheritance. Infants show preference for form, pattern, and complexity to more neutral objects.

Freeburg, N. E., and D. T. Payne, "Parental Influence on Cognitive Development in Early Childhood: A Review," *Child Development,* Vol. 38, No. 1 (March 1967), pp. 65–87. Surveys literature dealing with child-rearing practices that affect cognitive development.

Harlow, H. F., and M. K. Harlow, "Learning to Think," *Scientific American,* Vol. 181, No. 2 (August 1949), pp. 36–40. This fascinating article, a classic, reports research with monkeys that supports the now commonly accepted view that power of reason must be learned.

Jensen, A. R., "Social Class and Perceptual Learning," *Mental Hygiene,* Vol. 50, No. 2 (April 1966), pp. 226–239. The author indicates that certain critical aspects in the learning process depend on environmental factors that vary by social class. This sort of research helps tell us what sort of deficiencies must be compensated for if children of the disadvantaged are to compete on equal terms in classrooms.

Lembright, M. L., and K. Hamamoto, "Subcultures and Creative Thinking: An Exploratory Comparison between Amish and Urban American," *Merrill-Palmer Quarterly,* Vol. XI, No. 1 (1965), pp. 49–64. A comparison of children representative of the general American society with those of a community isolated from the larger culture.

Lipsitt, L. P., "Learning Processes of Human Newborns," *Merrill-Palmer Quarterly,* Vol. 12, No. 1 (January 1966), pp. 45-71. Reviews historical circumstances in the study of the newborn and describes his own work on the topic at Brown University.

Riessman, F., "The Strategy of Style," *Teachers College Record,* Vol. 65, No. 6 (March 1964), pp. 484–489. Discusses in theoretical terms the importance of considering individual differences in children's learning styles. The problem is to utilize the strengths in an individual's style and to overcome weaknesses.

Taba, H., and F. F. Elzey, "Teaching Strategies and Thought Processes," *Teachers College Record,* Vol. 65, No. 6 (March 1964), pp. 524–537. This provocative article considers the learning and teaching of certain cognitive skills in the school setting. The assumption is that thought consists of describable processes subject to powers inherent in the individual. The design for the study reported here provided for the special training of teachers in the analysis of thought processes and in devising effective teaching strategies for their development.

4

LANGUAGE DEVELOPMENT

Any intelligent layman could support the importance of a child's language development; indeed, his capacity to do so would constitute one argument, for an individual needs language not only to understand but to make himself understood. Also, through language a child learns his culture and special ways of adapting to it. The American child must learn to say "Excuse me," and "How do you do?"; else he will be criticized as ill bred. The Japanese child has to learn several degrees of deferential expression. Moreover, speech is a mark of social class. "I have went" and "Ain't got" label the speaker as being lower class.

Through language the child also learns to think; and man's claim to superior status in the animal kingdom is based largely on his ability to use language and to learn concepts. Some theories even make language the key factor in concept development; and some research underscores this emphasis. For example, in double alternation problems of the type "left twice—right twice," deaf children who did not know how to count proved inferior to hearing children (Oleron, 1954). However, language is by no means essential in the concept formation of deaf-mutes (Furth, 1966). Even rats can acquire a simple concept such as the notion of triangularity through being rewarded for selecting triangles from among various shapes (Fields, 1932).

Language may also be thought of as affecting the system employed to understand and organize the environment (Johnson, 1962). Whorf (1956), a student of Indian languages, found that direct translations from one to another were often impossible. One tribe might use the same name for the colors gray and brown. Another might make no clear distinction between nouns and verbs. Therefore, Whorf concluded that language structure determines ways of perceiving the world. The world is conceived quite differently by persons with different language structures.

Actually, little is known about the influence of language on more complex types of **cognition** such as the problems in mathematics and natural science investigated by **Piaget**. Nor do we have any conclusive evidence to support G. H. Mead's suggestion that language learning is necessary to define oneself and to classify one's own acts, and hence highly significant for the development of social and moral behaviors. Certainly, we lack adequate studies of children who misuse language as a means of emotional catharsis or of controlling others.

One area of interest is the significance of various environmental factors on language development. For one thing, cultures differ greatly in attitudes and practices related to language teaching. For example, among the Mohave language instruction is more casual than among the Hidatsa, who employ no baby

talk at all. In societies that make more rigid demands on the child, the child is more likely to stutter. Cultures also differ in amount and type of verbal stimulation given children. Within the same culture, parents vary in their influence on children's language development. For example, Marge (1965) reported that children of permissive mothers scored higher on language maturity. Apparently onliness and the presence of older siblings were also related to faster-than-average language development.

Other influencing factors are numerous. The effects of attendance at nursery school and of televiewing are undetermined. Schramm and his associates (1961) reported that, insofar as vocabulary represents general knowledge, television seemed to help children get a head start. However, this advantage was not maintained. In the sixth and tenth grades, children who had grown up in towns with and without television did not differ in total information level.

The precise role of **genetics** in language development is unclear. Unlike most other behaviors, language is confined to humans. True, animals and even insects communicate—bees, for example, by means of dances. And while the bees' communication system seems largely genetically determined, it sustains certain environmental modifications. If bees from different strains are united in the same hive, they may actually misinterpret each other's signals. To be efficient, a completely genetically determined system of communication requires genetic homogeneity of the population; and a bee population consists under normal conditions of full sisters (von Frisch, 1965). In genetically heterogeneous populations, such as among humans, learning is more necessary for effective communication.

There are many theories as to how such learning occurs, but as yet we do not possess definitive answers. Initially, infants of different races emit the same speech sounds. However, in time sounds that do not occur in the child's native language drop out; and by six months of age the child is repeating syllables that resemble those used in adult speech. But what process, meantime, has occurred? The temptation is either to superimpose on the process an adult set of rules, making of the infant babbler a sort of high-chair linguist, or to label the infant's communication idiosyncratic — a subspecies of the English language.

Until the last decade, studies of language development were largely concerned with quantitative aspects of language. Typical studies involved rate of increase in length of utterances, rate of vocabulary increase, and proportions of different parts of speech. However, recent studies seek a deeper knowledge of the structure of children's language and attempt to define the rule systems employed at different levels. These studies derive both from psychology and linguistics, with a new field, psycholinguistics, emergent. In turn, the child's language system can be studied from the standpoint of his own system, involving his own rules for forming sentences, or the system of his culture.

One group of theorists insist that sounds acquire meaning through a process similar to classical **conditioning** and that motor responses used in the production of speech are learned through a process similar to **operant conditioning**. When a word is paired with a familiar word or experience, as when the mother says "dog" every time Spot appears, a conditioned response is formed between the word and the object. Along this line, Weisberg (1963) has demonstrated that vocalizations of the three-month-old infant can be operantly conditioned by social consequences.

Skinner (1957) suggests that the child's vocalizations are shaped by reinforcement in much the same manner that the animal's behavior is shaped in an operant-conditioning association. That is, the child is reinforced when he makes sounds similar to those his parents use and not reinforced when he makes other sounds. Others feel that Skinner's theory places too much emphasis on external

stimulation and fails to recognize that human beings possess unique, possibly innate, information-processing capabilities, which are largely independent of environmental feedback. In this sense, the child not merely learns sentences, but produces them.

However, we need to know far more than we now do to devise a completely satisfactory theory of language acquisition. In particular, we need more longitudinal studies of language development. To date, most structural analyses of language have involved young children. What studies are available indicate that by the age of four most children have acquired the fundamental structural features of their language and many relevant details. Then follows a long period of consolidation and refinement. In due time, the child's "buyed" becomes "bought," in keeping with the adult norm. During the next few years we can expect publications that will treat the emergence of grammatical features in children's speech and contain records of children's speech at different stages of grammatical acquisition. Also, there will certainly be much experimentation of a new and imaginative nature. In one interesting study, Ruth Weir (1961), a linguist by training, tape-recorded the monologues that her young son addressed to himself in his crib before he went to sleep at night. In places the monologues appear impressively similar to workbook exercises for foreign students learning English.

In the following selection, Dr. Dorothea McCarthy, Professor of Psychology at Fordham University and an outstanding authority on language development, considers developmental processes and factors involved in language disorders. She outlines the structural and physiological correlates of infant vocalization and then considers certain psychological factors involved, including individual differences.

In the second article, by Dr. Robert Hess and Dr. Virginia Shipman of the University of Chicago, we see the complex interrelationships between language, thought, and sociocultural context. For a long time the emphasis in studies of language development was on maturational theory, recordings of sequences in verbal development, and rate of word acquisition. Here more complex sociocultural aspects of intercommunications are brought into focus—a matter of crucial concern in the education of disadvantaged children. This article, which is based on research in the Urban Child Center at the University of Chicago, indicates how style of communication is linked with social background and interaction.

LANGUAGE DEVELOPMENT

DOROTHEA McCARTHY

You who have been specializing in the study and improvement of speech are already aware of the vital importance of clear speech and effective communication. You have seen the educational cripples who have resulted from inadequate development of language skills and you also realize the heights to which a person with effective language skills can rise in his ability to communicate with and influence others. Let us ask ourselves, then, how do

From Dorothea McCarthy, "Language Development," *Monographs for Society Research in Child Development,* Vol. 25, No. 3 (Whole No. 77), 1960, pp. 5–14. Reprinted by permission of The Society for Research in Child Development, Inc.

these tremendous individual differences come about? How can we promote good verbal skills in children and what can be done to avoid speech defects and other language disabilities?

In order to answer such questions, we must examine the developmental process from the beginning and try to discover the environmental factors that facilitate language development, and what factors seem to be present in the case histories of those who suffer from the various language disorders. Many people think that language development begins when the child uses his first word, but there are many things which happen in a child's prelinguistic babblings long before true speech is heard which have important developmental significance. The newborn infant sleeps most of the time when he is not eating. He is basically mute, except for crying sounds, which communicate his physical distress to those who care for him. At this time, his entire respiratory system is very much occupied with the establishment of breathing patterns and with the taking of food, essential for the survival of the infant. During the few waking moments before and after each feeding, the infant hears the voices of other members of the household as they speak to him and about him, or to each other. He uses his own voice, not only in his cries of hunger and discomfort, but in eager anticipation of being fed, as well as in little grunts and gurgles of satisfaction after having been fed. His language experience is beginning during the early listening process in which the mother is the child's first language teacher and in which he soon begins to echo back her voice in vocal play, cooing, and in babbling.

Reports from major infant studies record children's babbling in rather crude terms, but all the studies report infants as responding to the human voice and engaging in spontaneous cooing sometime between the second and fourth months of life. A variety of syllables are heard between the fourth and sixth months of life, and by the tenth month most babies begin to imitate the sounds and voices of others. The studies by Irwin[13,14,15] and his associates at Iowa have developed techniques for the more detailed study of early infant babblings. The earliest noncrying speech sounds are vowels with about four different vowels heard during the first two months, and thereafter, about one more vowel is added every two months for the first year of life. The rest of the vowels are added to the repertoire more slowly during the second year of life. These data are based on Irwin's investigations in which 95 infants were studied at bimonthly intervals for the first 30 months. It is also of interest to note that the number of different consonants exceeds the number of different vowels at about one year, and this is approximately the age at which normal babies speak their first word. There are many more consonants in the language to be learned than vowels, and only about two or three of them are used in the first months of life. They, too, increase rapidly at first and then more slowly until about 15 different ones, or about half the total that are to be acquired, are uttered by two and one-half years of age. One of the most interesting and significant measures is the ratio of the total number of consonants to the total number of vowels. In the first two months, babies use about one consonant for every four vowels. By one year, they use about one consonant for every two vowels, and by two years of age they are using about an equal number of vowels and consonants. They are then able to form simple syllables for all of their utterances.

Turning our attention from the quantitative aspects of vowel-consonant development to the more qualitative aspects, some interesting trends in vowel development are noted. Irwin's[13] data indicate that in the earliest months the vowels are predominantly those made with the front part of the oral cavity and that these vowels show a relative decrease with age in the first two and one-half years. However, vowels made with the back part of the oral cavity are very few in the earliest months and show a marked

relative increase with age. Consonants, on the other hand, yield a developmental curve just the reverse of that for vowels. The consonants made with the back parts of the oral cavity (the glottal and velar sounds) are predominant in the vocalizations of six-month-old infants, whereas records made by Voelker[26] show the consonants made with the front part of the oral cavity (labials, labio-dentals and post-dentals) are predominant in the speech of adults.

Consonant sounds made with the front part of the oral cavity, especially the labials, labio-dentals and post-dentals, increase markedly with age in infants. It must be remembered that these changes in the development of speech sounds are occurring in a very complex organism, which is also developing very rapidly in a variety of other ways. In making these sounds, the child is using extremely complex and delicate groups of organs which serve not only the speech function, but also the two other basic functions of breathing and eating.

The child does not engage in playful cooing and babbling until after the more basic functions of breathing and eating are well established. Following the age when most babies have experience with solid food, which affords exercise and helps to develop the speech mechanisms, much more variety in the utterances is heard. In Irwin's data, 50 per cent of all sounds uttered by newborn babies and 97 per cent of all consonants heard in this early stage were the aspirate *h* sound which is undoubtedly associated with the infant's early gasping for breath in the state of "oxygen hunger" which has been described by Ribble.[21] It is interesting to note in this connection that Webster gives the Greek origin of the letter *h* as meaning "rough breathing." Some writers have made the point that, by the time the baby makes the cooing sounds characteristic of the second month of life, it is a sign that respiration is well established and that the child has breath to spare for other than emergency uses. Much of the neonatal waking time is concerned with the second important physiological function of the organs of speech, in which he develops skill in sucking and swallowing. Practically no noncrying speech sounds are heard until after breathing, sucking, and swallowing are well established. Shorara,[23] working at Michigan, claimed that all movements involved in speech are first used for, and are virtually identical with, movements of swallowing, chewing, and mastication. It appears that the gross movements of opening the oral cavity and changes in the elevation of the dorsum, or root, of the tongue are all that are needed for this early phase of vowel production which is the sound stream or the raw material for speech.

The finer motor control of the blade and tip of the tongue needed to produce consonant sounds comes later, after the child has had considerable exercise in swallowing, chewing, etc. It is these modifications of the sound stream to form recognizable syllables which seem to be the most significant in the child's development of true speech. The earliest consonants, then, are the back consonants *k* and *g* which are primarily associated with swallowing or belching in the feeding situation.

Certain developmental changes seem to be associated with the infant's gain in postural control. Vocalizing in response to social stimulation is reported to occur in about the second and third months, when most babies are learning to hold their heads erect. The so-called "babbling stage" has its onset at about seven months of age, which coincides approximately with the age at which the average baby learns to sit up; and the appearance of the first real words corresponds quite well to the average age of standing. No nasal sounds occur in the first four months, which is the period when the child lies down all of the time in either the supine or prone position. There is, however, a gradual rise in the percentage of nasal sounds as the child sits up more of the time, and nasal sounds constitute only about 10 per cent of the child's consonants from the age of sitting up at about seven

months to about 15 months. Another spurt in the curve for the development of nasal sounds occurs between 18 and 24 months as the child enters the runabout period.

Several writers[5,22] have pointed out that there seems to be a cyclical relationship between the child's development of motor skills and his progress in vocalization. While babies are concentrating on the new skill of sitting up, they may be relatively silent and babble freely only *after* the skill of sitting is mastered. Even reaching and grasping are often deferred until the more basic postural skill of sitting is accomplished.

Similarly, another type of plateau occurs in vocabulary building when babies are concentrating on learning to walk, usually between 15 and 18 months. The absence of nasal sounds when the child is lying down is quite understandable, when the mechanisms involved are considered, for the force of gravity pulls the velum in such a way as to close off the nasal passages, so that it would be practically impossible to make nasal sounds while lying down. X-ray studies indicate that even a 20-degree shift in the head tilt of adults does change their pronunciation of vowels. Therefore, it seems quite reasonable to assume that postural changes in the infant are related to the development of vocalization. It should also be noted that the naso-pharyngeal cavity doubles in height during the first few months when the sucking drive is very strong. Babbling occurs not only at the same age at which most babies sit up, but it also coincides quite closely with the period when most infants are given spoon and cup feeding and begin to have experiences with solid food which affords exercise and the development of many speech mechanisms.

Gesell and Ilg[10] report that most solid foods are taken well by 10 months of age, which is the age at which most students of speech report syllabic utterances due to anticipation of the feeding situation. Possibly these syllables are the child's first words, for it is indeed in just such situations that sounds take on meaning and become real words when used consistently in the same situations.

At about one year of age, when the average child has a speaking vocabulary of about three words, he gains considerable independence not only in self feeding, but also in getting about from place to place. Immediately thereafter, most babies show a rapid increase in vocabulary which is no doubt related to their broadening experience with more places and things. When the infant is in the earliest stage, in which most of his sounds are of a vowel character, he has no front teeth to form the front wall of the oral cavity. It is interesting to note, however, that there is a marked increase in the occurrence of front consonant or post dental sounds between six and 28 months which is the normal dentition period.

Having examined, briefly, the structural and physiological correlates of infancy, let us now consider some of the psychological factors and some problems of individual differences in the development of vocalization. The mother is normally the child's first language teacher in our culture, and it is she who furnishes the example for the baby to imitate. It is her voice that he echoes back in his babbling and her smile and fondling which most often elicit his cooing and other prelinguistic utterances.

Evidence that the amount of contact with the mother is significant for language growth comes from the fact that only children talk earlier and better than children with brothers and sisters[7] and that twins and other multiple-birth children, who always have to share the mother, are usually retarded in language development.[3,8,12]

Studies indicate that it is not merely the amount of contact with the mother which is important, but also that the quality of the mother-child relationship has a significant influence on the acquisition of language. This factor is difficult to measure, but it is necessary to understand what the qualitative differences are and to learn how to measure and evaluate them. The mother reflects her own per-

sonality in the kind of nurture she gives her baby. The very way she approaches motherhood is significant. Whether she welcomes or dreads the child's arrival; whether she feels adequate to care for him; whether she is tense, worried, and uncertain in everything she does for him; whether she is happy and talks to him as she goes about her tasks or pushes the baby carriage; whether she is silent and preoccupied while giving mere physical care, or is impersonal and allows the child to vegetate most of the time are the kinds of things which are important in determining whether his language development will thrive, or be stunted and distorted in some unfortunate way. The mother is the child's primary love object, as Wyatt[27,28,29] has pointed out, who unavoidably gratifies and frustrates the child in the process of socialization and training. Wyatt[28] suggests that it is almost inevitable that the child feel ambivalent toward his mother, and she cites Melanie Klein[16] who claims that an optimum amount of anxiety, as well as sufficient capacity of the emerging ego to tolerate anxiety, is necessary for the beginning of symbol formation or the onset of true language. Wyatt[27] states, as her main thesis, that satisfactory interpersonal relations, in particular, the relationship between mother and child, at the prelinguistic as well as at the linguistic level, are prerequisite to the development of symbol formation and for the successful acquisition of language. The vicissitudes of the mother-child relationship she says have a determining effect on the nature and outcome of the process of language training, and further, that the learning of the mother's speech is a deeply emotional experience for the young child and, like other learning, is achieved through the process of unconscious identification. Learning to speak, like all other primary learning, will therefore be influenced by the child's relationship to the mother.

Agreeing with the work of Baker,[1] Wyatt[27] states that the mechanism of reciprocal identification emerges as a core mechanism in all language behavior. Geber[9] reports a fascinating cross-cultural study, showing the effects of maternal behavior on the psychological development of African children during the first year. In the particular population which was sampled, the children were not malnourished, as many African babies are. Among these people, the author states, the arrival of a baby is always looked forward to with great pleasure, and sterility is regarded as a calamity. Pregnancy is not a source of anxiety for the future. The mother is placid, not at all upset by her pregnancy, and is active up to the time of delivery. The unborn child is her chief interest in life and she accepts motherhood happily. She believes that any other interest at this time may have a deleterious effect on the baby. As soon as he is born, he is her constant companion and he is carried on her back as she goes about her various activities. She sleeps with him, feeds him on demand, forbids him nothing, and never chides him. Such a regime obviously reduces the ambivalence we were discussing previously. Geber[9] goes on to state that the baby in the culture studied is continually being stimulated by seeing the mother at her various occupations and hearing her "interminable conversations," and, because he is with her, his world is described as relatively extensive.

Children reared in this fashion, when tested with the Gesell schedule and other infant tests which have been standardized in western culture, were found to be well in advance of European and American standards in psychomotor development. For example, these children were able to hold their heads erect on the first day; were sitting up at seven weeks; and standing, with support, at five months. Geber[9] states: "their interest was lively and their personal-social relations excellent. They made very good contact with the tester, turning and 'talking' to her, smiling at her, and trying in every way to communicate with her" (p. 186). The development was not homogeneous in all sections of the tests, for up to the fifth month the motor precocity was remarkable. Between

the fifth and seventh months, adaptivity, *language,* and personal social relations, however, came to equal this motor development. The level was that of European children two or three months older. One wishes this study were reported in more quantitative form, with due regard for variability and individual differences. However, the writer claims that the behavior of the babies was almost strikingly like that of European babies whose mothers had a very strong desire to become mothers and who had learned the relaxation techniques advocated by Dr. Grantly Dick Read[20] of "Natural Childbirth" fame. She also notes that the babies of more sophisticated African parents, who left their infants in cribs much of the time and fed them on regular schedules in imitation of the European mores, were not showing the same precocity in motor development and were later inclined to be "quiet and subdued." The African babies studied by Geber,[9] however, are usually weaned suddenly and then manifest extremely clinging behavior, their development showing a marked change for the worse following the abrupt weaning. These observations would lend support, then, to the theories of Wyatt[27] and others which emphasize the crucial role of maternal attitudes in the language development of children.

Myklebust[18] has described the genetic development of language by stating that, functionally, language can be divided into three types: inner, receptive, and expressive which are acquired in that order. Inner language is described as that which the child uses to talk to himself in an autistic fashion and manifests itself during the first eight or nine months of life. Receptive language, involving the comprehension of the language of others, appears usually from eight or nine months to 12 or 13 months. This is followed by the onset of expressive language or the ability to make oneself understood. The expressive use of language, Myklebust[18] claims, can occur only after both inner and receptive language have been partially established. He states that it is apparent that much of the language process, in terms of language acquisition, has preceded the specific occurrence of being able to use words expressively.

The same author states that normal language development assumes the integrity of the organism. Not only must the sensory, motor, and central nervous systems be intact, but the organism must possess "psychological integrity." Myklebust[18] says normal language development may be interfered with by sensory involvement such as deafness or blindness and by central nervous system damage such as aphasia, cerebral palsy, or mental deficiency. It can also be obstructed by any interference with the process of integration such as childhood schizophrenia, infantile autism, and even severe anxieties. Any of the above may impair the normal integrative processes and impede the development of the first stage, namely, inner language. In other words, if a baby develops under conditions of severe tension and anxiety, he may not be psychologically well integrated and may develop one or more forms of language disorder.

Mowrer[17] has pointed out that the psychological processes which are directly related to language acquisition are identification, internalization, and imitation. He cites Sullivan who stressed the importance of the role of anxiety in early infancy with reference to language development. Many authorities agree, therefore, as to the necessity of what Myklebust calls *psychological integrity* in order for normal language development to occur.

The relationship between language development and intelligence is a question of perennial interest. It is safe to say that mentally defective children are always delayed in the onset of speech, and their articulation and sentence structure are usually of poor quality. All children who speak late are not, however, mentally retarded, for there are many other reasons for delay in talking, and even some very bright children have not talked until three or three and one-half years of age. However, intellectually gifted children are usually early and efficient speakers and early

speech is a very good index of future mental precocity.

The major reason why the age of onset of speech is so important is that, once children have begun to talk in sentences, they talk much of their waking day and practice their speech almost incessantly in a normal environment. Estimates based on records of all-day conversations[2,4,19] and on the work of Smith[24] indicate that children between three and four years of age use approximately 15,000 words per day or about 5,500,000 words in a year. Thus, a great deal of practice in oral language occurs in the preschool period, and a delay of six months or a year in its onset can seriously handicap a child for entrance into the verbal competition of the classroom. Just when this practice in oral expression is in its ascendency, the traditional type school represses talking as part of the socialization process and frustrates the child in the practice of oral language. Yet a good foundation in oral expression is the best preparation a child can have for learning the tool subjects which will lead to success in the academic situation.

Results of studies of infant language are being applied in the development of infant intelligence tests. Although the best single intelligence test is a measure of vocabulary, most of the infant tests have, in the past, concentrated on psychomotor development and have more or less neglected the infant speech area. Because various instruments for measuring infant intelligence have proved disappointing for long-term prediction, there has been a decided lag in the attempts to measure intelligence at the earliest levels. Griffiths[11] has developed a test which includes a speech and hearing scale within the total battery which should prove useful as a research and clinical tool. Since Spiker and Irwin[25] and Catalano and McCarthy[6] have found substantial correlations between such measures as consonant-type frequency and the consonant-vowel ratio in infancy with IQs obtained on the Kuhlmann and the Stanford Binet tests, it appears that measures of infantile language do have promise and should be used in further attempts to measure the verbal factor in infancy. Griffiths[11] says, when a child is backward in learning to speak, or has a speech disorder, he is in danger of being regarded as a generally backward or even a defective child. This tendency to regard delayed speech development as an indication of general mental retardation is sometimes applied when there is evidence of normal progress in other directions. If it can be demonstrated with a new method of assessment in certain of these cases that the defect is specific and not general, then the disability can be regarded less fatalistically and as something to be treated and alleviated.

The future of research in the field of language development appears to be primarily a matter of the team approach involving experts in a wide variety of disciplines including electronic engineers, developmental psychologists, speech pathologists, linguists, and anthropologists. With regard to sampling, too much of our research on children's language has been based on the white preschool child of the middle western United States. With our rapidly shrinking world we must broaden our outlook to include cross-cultural studies which could indicate how children's language develops in different societies and in different racial and cultural groups. Most of the research in the field of language development has been primarily descriptive, aimed at determining norms and describing how the child's language develops. More dynamically oriented studies are attempting to determine why language develops in a particular way and what factors seem to accelerate or retard its development. Infant studies, which have shown clearly the importance of early personal contact for normal language development, have had a marked influence in stimulating a tremendous interest in research on family relations. With these facts in mind, it is my prediction that, if we are to make real progress in this area, some way of teaching phonetics to larger groups of research investigators in the field must be found,

and greater cooperation between linguists and developmental psychologists and speech therapists must be achieved.

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EARLY BLOCKS TO CHILDREN'S LEARNING

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In the context of today's urgent need for preschool education, the central question is: Can we successfully intervene on a massive scale in the cycle of generation-to-generation transmission of poverty and semi-illiteracy? Any answer given at the present time would be based more on optimism than on experience and results. It would be naive, misleading, and irresponsible to make promises of easy success and instant results from large-scale programs intended to raise the educational level of children and families of low socioeconomic groups. There is some reason to be hopeful, but, at the present time, little basis for unrestrained enthusiasm.

Research now under way at the Urban Child Center of the University of Chicago is attempting to reach a greater understanding of two related questions: (1) When we strip away personal concern and sympathy for human tragedy, and after we discard the political slogans, what *is* cultural deprivation and how does it act to shape and depress the resources of the human mind? (2) How does cultural disadvantage affect the mind of the young child?

Our hypotheses are these: first, that the behavior which leads to social, educational, and economic poverty is socialized in early childhood, that is, it is learned; and, second, that the central factor involved in the effects of **cultural deprivation** is a lack of **cognitive** meaning in the mother-child communication system.

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We proceed on the assumptions (1) that the structure of the social system and the structure of the family shape communication and language; and (2) that language shapes thought and cognitive styles of problem-solving. In the deprived-family context, this means that the nature of the control system which relates parent to child restricts the number and kind of alternatives for action and thought that are opened to the child. Such constriction precludes a tendency for the child to reflect, to consider and choose among alternatives for speech and action, and develops modes for dealing with stimuli and with problems which are impulsive rather than reflective, which deal with the immediate rather than the future, and which are disconnected rather than sequential.

This position draws from the work of Basil Bernstein of the University of London. In his view, language conditions what the child learns, and how he learns, thus setting limits to his future learning.[1] He identifies two forms of communication codes or styles of verbal behavior: *restricted* and *elaborate*.

Restricted codes are stereotyped, limited, and condensed, lacking in specificity and in the exactness needed for precise conceptualization and differentiation. Sentences are short, simple, often unfinished; there is little use of subordinate clauses for elaborating the content of sentences: it is a language of implicit meaning, easily understood and commonly shared. It is the language often used in impersonal situations when the intent is to promote solidarity or reduce tension. Restricted codes are nonspecific clichés, statements, or observations about events, made in general terms that will be readily understood. By its nature, this mode limits the range and detail of concept and information involved.

Elaborate codes are those in which communication is individualized. The re-

sultant message is specific to a particular situation, topic, and person: it is more particular, more differentiated, and more precise; and it permits expression of a wider and more complex range of thought, tending toward discrimination among cognitive and affective content.

Such early experiences affect not only the communication modes and cognitive structure; they also establish potential patterns of relationship with the external world. One of the dynamic features of Bernstein's work is his view of language as social behavior. As such, language is used by participants of a social network to elaborate and express interpersonal relationships and thus shape and determine these relationships. An understanding of the integral association between language and social structure is of critical importance for an understanding of the effects of poverty upon children. Within the individual family, this association emerges in terms of the principles which govern the decision-making activities, which, themselves, help regulate the nature and amount of social exchange.

Two Family Types

The interlacing of social interaction and language is illustrated by the distinction Bernstein makes between two types of families—those oriented toward control by *status* appeal, or ascribed role norms, and those oriented toward *persons*.[2]

In status-oriented families, behavior tends to be regulated in terms of role expectations. There is little opportunity in these families for the unique characteristics of the child to influence the decision-making process or the interaction between parent and child, the internal or personal needs of the children not being influential as a basis for decision. Norms of behavior are stressed with such imperatives as "You must do this because I say so," "Girls don't act like that," or other statements which rely, for justification, on the status of the participants or a behavior norm.

In the person-oriented family, the unique characteristics of the child modify status demands and are taken into account in interaction. The decisions of this type of family are individualized and less frequently related to status or role ascriptions. Behavior is justified in terms of feelings, preference, personal and unique reactions, and subjective states. This philosophy not only permits, but demands, an elaborated linguistic code and a wide range of linguistic and behavior alternatives in interpersonal interaction. Status-oriented families may be regulated by less individuated commands, messages, and responses than person-oriented families. (Indeed, by its nature, the status-oriented family relies more heavily on a restricted code; the verbal exchange is inherent in the structure, regulates it and is regulated by it.)

These distinctions may be clarified by two examples of mother-child communication, using these two types of codes.

Assume that the emotional climate of two homes is approximately the same, the significant difference between them being in the style of communication employed. A child is playing noisily in the kitchen with an assortment of pots and pans when the telephone rings. In one home, the mother says, "Be quiet," "Shut up," or gives some other short, peremptory command, and answers the phone while the child sits still on the floor. In the other home, the mother asks: "Would you keep quiet while I answer the phone?"

The questions our study poses are these: What inner response is elicited in the child in each of these two situations, and what is the effect upon his developing cognitive network of concepts and meaning?

In one instance, the child is asked for a simple mental response. He is asked to attend to an uncomplicated message and to make a conditioned response (to comply); he is not called upon to reflect or make mental discriminations. In the other example, the child is required to follow two or three ideas; he is asked to

relate his behavior to a time dimension; he must think of this behavior in relation to its effect upon another person; he must perform a complicated task in following the communication of his mother, in that his relationship to her is mediated in part through concepts and shared ideas; and his mind is stimulated or exercised (in an elementary fashion) by a more elaborate and complex verbal communication initiated by the mother.

As objects of these two divergent styles of communication, repeated in various ways, in similar situations and circumstances during the preschool years, these two imaginary children would be expected to develop significantly different verbal facility and cognitive equipment by the time they entered the public school system.

In our project, we view the child as an organism which receives a great deal of information of many kinds, much more than he can accommodate. What he responds to, how he interprets stimuli, and how he reacts to it, the child learns in interaction with the environment. In other words, he is taught what to attend to, how to interpret messages, and how to respond. These patterns of cognitive activity, socialized in early experience in the home, become the basis upon which the child's further cognitive development proceeds.

An analysis of language and social structure is necessarily concerned with the consequences of linguistic codes and their accompanying patterns of social interaction upon the developing cognitive faculties of the child. It is our argument that person-oriented families tend to justify behavior and emphasize its consequences; and that status-oriented families ask for rote learning and acceptance of the *status quo*—that is, they use a more rigid learning and teaching model, in which compliance, rather than rationale, is stressed.

The Project

For our research, 160 Negro mothers and their 4-year-old children were selected from four different socioeconomic levels: Group A came from college-educated professional, executive, and managerial occupational levels; Group B from skilled blue-collar occupational levels, with not more than high school education; Group C from unskilled or semi-skilled occupational levels, with predominantly elementary school education; and Group D from unskilled or semi-skilled occupational levels, with fathers absent and family supported by public assistance.

These mothers were interviewed twice in their homes and brought to the university for testing in an interaction session between mother and child in which the mother was taught three simple tasks by the staff member, then asked to teach these tasks to the child.

One of these tasks was to sort or group a number of plastic toys by color and by function. The second was to sort eight blocks by two characteristics simultaneously. The third required mother and child to work together to copy five designs on a toy called "Etch-a-Sketch."

The objective of the project is to relate the behavior and performance of individual mothers to the cognitive and scholastic behavior of their own children. We expect to follow the children of the study through the first 4 years of school, to obtain data on a more complete range of behavior. At our present, relatively early, stage of analysis, data are being examined in terms of social class differences among the four socioeconomic groups of the study—professional (middle), skilled workers (upper lower), unskilled (lower lower), and public assistance (AFDC). At this point in the project, our data about the cognitive behavior and language skills of the children are limited.

The wide range of individual differences in linguistic and interactional styles of these mothers may be illustrated by excerpts from recordings of one of the structured teaching situations, the task of the mothers being to teach the child how to group, or sort, a small number of toys.

The first mother outlines the task for the child, giving sufficient help and explanation to permit the child to proceed on his own. She says:

> All right, this board is the place where we put the little toys. First of all, you're supposed to learn how to place them according to color. Can you do that? The things that are all the same color you put in one section; in the second section you put another group of colors and in the third section you put the last group of colors. Can you do that? Or would you like to see me do it first?
> *Child:* I want to do it.

This mother has given explicit information about the task and what is expected of the child; she has offered support and help of various kinds; and she has made it clear that she impelled the child to perform.

The style of a second mother is not quite so easily grasped by the child. She says, in introducing the same task:

> Now I'll take them off the board; now you put them all back on the board. What are these?
> *Child:* A truck.
> All right, just put them right here; put the other one right here; all right, put the other one there.

This mother relies more on physical signs and nonverbal communication in her commands; she does not define the task for the child; the child is not provided with ideas or information that he can grasp in attempting to solve the problem; neither is he told what to expect or, even in general terms, what the task is.

A third mother is even less explicit. She introduces the task as follows:

> I've got some chairs and cars. Do you want to play the game?
> The child does not respond.
> The mother continues: O.K. What's this?
> *Child:* A wagon?
> *Mother:* This is not a wagon. What's this?

The conversation continues with this sort of exchange. Here again, the child is not provided with the essential information he needs to solve or to understand the problem. There is clearly some coercion, on the part of the mother, for the child to perform; but the child has not been told what he is to do.

Each teaching session was concluded with an assessment by a staff member of the extent to which the child had learned the concepts taught by the mother. His achievement was scored in two ways: first, the ability to place or sort the objects correctly; and second, the ability to verbalize the principle on which the sorting or grouping was made.

Social Class Differences

There were marked social class differences in the ability of the children to learn from their mothers in the teaching sessions. Children from middle-class homes ranked above children from the lower socioeconomic levels in performance on these sorting tasks, particularly in offering verbal explanations as to the basis for sorting. Over 60 percent of middle-class children placed the objects correctly on all tasks. The performance of children from the other groups ranged as low as 33 percent correct. Approximately 40 percent of the middle-class children who were successful were able to verbalize the sorting principle. Children from the lower socioeconomic groups were, on the whole, less able to explain the sorting principle. These differences clearly paralleled the relative abilities and teaching skills of the mothers from the different groups.

The differences among the four socioeconomic levels were apparent not only in sorting and verbal skills, but also in the mother's ability to regulate her own behavior and her child's in performing tasks which require planning or care rather than verbal or conceptual skill.

These differences were revealed by the mother-child performance on the "Etch-a-Sketch" task.

An "Etch-a-Sketch" toy is a small, flat box with a screen on which lines can be drawn by a device within the box. The marker is controlled by two knobs:

one for horizontal movement, the other for vertical. The mother is assigned one knob, the child the other. The mother is then shown several designs which are to be reproduced. Together, they attempt to copy the models. The products are scored by measuring deviations from the original designs. The mother decides when their product is a satisfactory copy of the original designs.

These sessions were recorded, and the nonverbal interaction was described by an observer. Some of the most relevant results were these: middle-class mothers and children performed better on the task (14.6 points) than mothers and children from the other groups (9.2; 8.3; 9.5). Mothers of the three lower socioeconomic groups were relatively persistent, rejecting more complete figures than the middle-class mothers; mothers from the middle class praised the child's efforts more than other mothers did, but gave just as much criticism; the child's cooperation, as rated by the observer, was as good or better in low socioeconomic groups as in middle-class pairs; and there was little difference between the groups in affect expressed to the child by the mother.

In these data, as in others, the mothers differed relatively little in the affective elements of their interaction with their children. The gross differences appeared in the verbal and cognitive environments which they presented. The significance of the maternal environment lies not only in the lack of verbal exchange but also in the kind of interaction that develops between learner and teacher. Mothers of blue-collar classes appear to be socializing passive learning styles on the part of the child, teaching him to be docile in such learning situations—in contrast to the more active, initiatory behavior of the child from a middle-class home.

One Question, Several Responses

The women in the study also varied in their perception of school. Applying Bernstein's concept of status-oriented and person-oriented families to our data, we analyzed maternal responses to the question: "Imagine your child is old enough to go to public school for the first time. How would you prepare him? What would you tell him?"

One mother, who was person-oriented and used elaborated verbal codes, replied as follows:

> First of all, I would remind her that she was going to school to learn, that her teacher would take my place, and that she would be expected to follow instructions. Also that her time was to be spent mostly in the classroom with other children, and that she could consult with her teacher for assistance on any questions or problems that she might have.
> Anything else?
> No. Anything else would probably be confusing for her at her age.

In terms of promoting educability, what did this mother do in her response? First, she was informative, presenting the school situation as comparable to one already familiar to the child; second, she offered reassurance and support to help the child deal with anxiety; third, she described the school situation as one which involves a personal relationship between the child and the teacher; and fourth, she presented the classroom situation as one in which the child was to learn.

A second mother responded as follows to the same question:

> Well, John, it's time to go to school now. You must know how to behave. The first day at school you should be a good boy and should do just what the teacher tells you to do.

In contrast to the first mother, what did this mother do? First, she defined the role of the child as passive and compliant; second, the central issues she presented were those dealing with authority and the institution, rather than with learning; third, the relationship and roles she portrayed were sketched in terms of status and role expectations, rather than

in personal terms; and fourth, her message was general, restricted, and vague, lacking information about how to deal with the problems of school, except by passive compliance.

These responses illustrated the tendency for status-oriented families and relationships to restrict the linguistic codes used in communication. The child who comes to school with a status orientation is prepared to engage in rote learning with passive acceptance of school authority in the learning situation. His initiative and participation in the learning possibilities of the school are meager. Not all such children accept the authority of the school in this unquestioning fashion, but they have few alternatives except to resist and rebel. The range of choice open to them is limited by the nature of the cognitive and interactional environment in which they have had experience.

A more detailed analysis of the mothers' responses to this question grouped their statements as *imperative* or *instructive*. An imperative statement was defined as an unqualified injunction or command, such as: "Mind the teacher and do what she tells you to do," or "The first thing you have to do is be on time," or "Be nice and do not fight." An instructive statement offers information or commands which carry a rationale or justification for the rule to be observed. Examples: "If you are tardy, or if you stay away from school, your marks will go down," or "I would tell him about the importance of minding the teacher. The teacher needs his full cooperation. She will have so many children that she won't be able to pamper any youngster."

Cultural Deprivation

Against this background let us return to the problem of the meaning, or perhaps more correctly, the lack of meaning in cultural deprivation. One of the features of the behavior of mothers and children of lower socioeconomic class is a tendency to act without taking sufficient time for reflection and planning. In a sense, one might call this impulsive behavior, not the acting out of unconscious or forbidden impulses, but a type of activity in which a particular act seems to be unrelated to the act that preceded it, or to its consequences. In this sense, it lacks meaning; it is not sufficiently related to the context in which it occurs, to the motivations of the participants, or to the goals of the task.

This behavior may be verbal or motor and it shows itself in several ways. On the "Etch-a-Sketch" task, for example, the mother may silently watch a child make an error, and then punish him. Another mother will anticipate the error and warn the child that he is about to reach a decision point; she will prepare him by verbal and nonverbal cues to be careful, to look ahead, and avoid the mistake. He is encouraged to reflect, to anticipate the consequences of his action and in this way avoid error.

Recall the example of the mothers and the telephone calls: one child was prompted to relate his actions to those of another person and to a time dimension, to delay, to observe, and to consider the consequences, the other was given a command that called for no reflection and did not require him to relate his behavior to the context in which it occurred. This is a model of a conditioned response, rather than a problem-solving strategy. A problem-solving approach requires reflection and the ability to weigh decisions, to choose among alternatives. The effect of restricted speech and of status orientation is to foreclose the need for reflective weighing of alternatives and consequences. The use of an elaborated code, with its orientation to persons and to consequences (including future), tends to produce cognitive styles more easily adapted to problem-solving and reflection.

The objective of our study is to discover how teaching styles of the mothers induce and shape learning styles and information-processing strategies in the children. The picture that is beginning to

emerge is that the meaning of deprivation is a deprivation of meaning—a cognitive environment in which behavior is controlled by status rules, rather than by attention to the individual characteristics of a specific situation, and one in which behavior is not mediated by verbal cues or by teaching which relates events to one another and the present to the future. This environment produces a child who relates to authority rather than to rationale; who, although often compliant, is not reflective in his behavior; and for whom the consequences of an act are largely considered in terms of immediate punishment or reward, rather than future effects and long-range goals.

Program Implications

If this picture is substantially correct, there are several implications for preschool programs.

For example, it would argue that enrichment for the sake of enrichment may miss the point—that it is not additional, or even more varied, stimulation that is needed, but experiences which give stimuli a pattern of sequential meaning. It argues that such programs must not merely teach the child new words, but must show the child how ideas and events are related to one another. And it argues that the transition that a child must make from a cognitive style of immediate reactivity to one of problem-solving must be made by experiences with authority, not with machines.

When the data are more complete, a more detailed analysis of the findings will enable us to examine the effect of maternal cognitive environments in terms of individual mother-child transactions, rather than in the gross categories of social class. This analysis will not only help us to understand how social class environment is mediated through the interaction between mother and child, but will also give more precise information about the effects of individual maternal environments on the cognitive growth of the young child.

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SUGGESTIONS FOR FURTHER READING

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5

EMOTIONAL DEVELOPMENT

The interest in children's emotions stimulated by Freud and his followers persisted for some years, but then research on the topic subsided. For one thing, emotions are blended with other aspects of personality, especially **motivation**, making separate treatment difficult. For another, emotions are abstractions and defy the quantification that intrigues many researchers.

However, various factors have revived interest in the topic, one being significant data relating emotions to progress in cognitive development. Another factor is the growing concern for mental health and efforts to identify the antecedents of adult adjustment. Also, findings from animal and infant research have raised the question: How do **hereditary** and **environmental** factors interact in emotional development? At least among animals, both sorts of factors prove significant. For example, Freedman (1955) reported differences between pups that had been disciplined and those that had been indulged. The indulged pups proved more active, more vocal, and less timid than did the disciplined pups. However, responses also differed according to breed. The breeds that had been strongly oriented toward the experimenter (wire-haired terriers and beagles) were much more affected by later punishment than were the more aloof Basenjis and timid Shetland sheep dogs. In the study of human infants, we lack definitive data concerning the effects of emotional fallout, which is typical of less stable homes. We usually think of neuroses as attached to adults, not infants, but it is believed the seeds of later disturbance are sown in the nursery.

Special interest also surrounds the topic of emotional differences between the sexes. In general, women seem to be more introverted, less self-sufficient, less self-confident, and more socially dependent than men (Bernreuter, 1933). However, few emotional differences between the sexes appear below the high-school age (Terman & Tyler, 1954). Whether such distinctions derive from biological factors or increasing differentiation in sex roles is unclear. In early years the sexes manifest little difference in emotion; but by middle childhood they differ both in degree of adjustment and in emotional manifestations generally. In a large majority of 30 studies summarized by Oetzel (1962), boys were reported as significantly more aggressive than girls. Only where verbal rather than physical aggression was concerned did girls achieve higher scores. Girls also proved more dependent and more suggestible than boys (Oetzel, 1962; Patel & Gordon, 1960). Similarly, after studying 1,300 subjects aged 15 to 64, Bennett and Cohen (1959) concluded that males place greater value on malevolent and hostile actions against a competitive society, while females place greater value

on freedom from restraint in a friendly and pleasant environment. But does the boy who learns to shake hands instead of shaking his fist lose any essential quality of masculinity, and does the girl who vigorously defends her rights neutralize her femininity? That is, does some mysterious sex-role mystique condemn both sexes to strains of unhealthy emotion?

One problem in studying the emotions, either of animals or infants, is deciding what sort of emotion a particular behavior implies. For example, Denenberg (1963) made the dubious assumption that high activity and low defecation in rats in open-field tests indicate normality, and their reverse, emotional disturbance. In infants, is the crying baby necessarily a disturbed baby? What proportion of the child's cries represents communication and what part distress? Will the emotional reservoir within the prelinguistic child remain forever a mysterious box without a key? If we wait until the child is old enough to report his feelings, we may fail to comprehend the sequence of experiences which account for his present emotional status. Even among older children, there is a gap of unknown width between how a child really feels and how he says he feels.

The majority of studies show that very emotional states are characterized by a high level of sympathetic activation with few, if any, physiological distinguishers (Schachter & Singer, 1962). However, it should not be overlooked that some studies do report different physiological accompaniments of the various emotions. And emotions are subjectively reported as having different physical accompaniments. Hokanson and his associates (1962) demonstrated that frustration is accompanied by a rise in systolic blood pressure, an index of physiological arousal. When the same subjects were roused to aggression, blood pressure was reduced, at least under some conditions. Only verbal or physical aggression reduced the physiological tension created by frustration, whereas fantasy aggression appeared to have little effect.

Interest has also been aroused in testing means of modifying emotional behaviors. Special attention has been paid certain more intractable behaviors, often with dramatic results (Brown & Elliott, 1965). There has also been concern as to how much, if any, stress a child may actually need to increase his capacity to withstand frustration. How often should the child be permitted to stub his toe, in the emotional sense, before the hovering mother launches Operation First-Aid?

One especially popular theory is that exposure to emotion in vicarious or symbolic form is in itself an effective means of discharging that emotion—the so-called drainage or **catharsis** hypothesis. Thus the adolescent who reads erotic books would drain off sex tension. Or the angry child might work off his hostility by daydreaming of clobbering the enemy, or by poking a doll in the nose while pretending it is the teacher he hates. Feshbach's (1961) work would seem to support this theory, but most investigators—for example, McNulty and Walters (1962)—reject it. They report that vicarious aggressive experience increases rather than reduces hostile reactions. Thus the infant who cuts his teeth on crime drama and brandishes a toy six-shooter could ultimately become a candidate for homicide.

During recent years the level of abstraction in studies of emotion has risen; and the focus has sharpened, so that whole chapters, even books, are devoted to particular emotions—especially hostility, fear, and anxiety. However, findings on certain topics are still negligible. For instance, there is almost no research on some emotions, including awe, repulsion, depression, and grief. Also, there are few studies of positive emotions, such as love, sympathy, empathy, and charitableness—and even these few are generally inadequate. The spotlight is on problem behaviors rather than on helping children to develop healthy, constructive emotional patterns. Fortunately, the govern-

ment and various other agencies are making available large sums for mental health research, so some of these gaps may be closed. We also need more phenomenological studies that are concerned with the individual's own perceptions of situations and his own interpretations of how he feels and why. It is hard for the adult to recapture, in retrospect, the trauma sustained from fanning out at bat or having a favorite cat run over.

It is especially necessary to study emotions in terms of specific children, instead of treating emotions such as hostility or anxiety as though they exist apart, as entities. Even when research is presented in terms of children, there is a tendency to think in normative terms, of a hypothetically "shy child," or "hostile child," and so on. Actually, few children would represent such a child in pure form. In short, much remains to be done; and it is hard to delineate the current status of research in this area.

Our first article, by Harry Harlow, indicates something of the dynamics of emotional processes as gleaned from experiments with monkeys. A common and often fruitful approach to studying more complex functions, such as emotions, is to obtain leads from research involving lower species, where the same general function may be observed in a more simplified version. Much of the most significant research of this type has come from the Primate Laboratory at the University of Wisconsin, which Dr. Harlow directs. The study presented here suggests that affectional development progresses by stages, despite much overlapping. Harlow likewise concludes that the same or similar variables determining the infant monkey's affectional patterns operate in human infants as well.

In our second selection, Gordon Bronson of Mills College, Oakland, California, identifies stages in the development of novelty. His findings, like most developmental research, tend to support a stage theory, at least in broad outline. Stage theory postulates a relatively invariant sequence of behaviors in progression toward maturity, or whatever function may be concerned. Bronson concluded that the development of normal patterns of fear behavior depends on successful transition through earlier stages. Factors which promote normal development are identified and the role of fear in infant pathology discussed. Bronson's conclusions are derived from an extensive survey of relevant studies of humans, other primates, and dogs.

Our third selection, by Albert Bandura, Dorothea Ross, and Sheila A. Ross, test the catharsis, or so-called "drainage," hypothesis, that undesirable emotion can be harmlessly drained off by permitting its expression in safe ways. Some investigators—for example Feshbach (see reference at end of this selection)—have supported the drainage theory. Other research, including this study, indicates that expression of emotion in "safe" situations simply builds it, rather than dissipating it. The question is important for various reasons. For example, will looking at crime dramas on television result in making children hostile? Will pornography inflame sex feeling or dispel it? Should children be permitted to talk back to adults in order to work off their feelings, or will they simply become more rebellious still? Dr. Bandura is a Professor in the Department of Psychology, Stanford University, Dorothea Ross is in the Pediatrics Department of Stanford Medical School, and Sheila Ross is associated with the Palo Alto Medical Research Foundation.

The last selection, by Clifford Fawl, concerns the incidence, intensity, and duration of unpleasant disruptions in the everyday lives of children. Dr. Fawl, who is in the Department of Psychology at Nebraska Wesleyan University, investigated the social and psychological origins of children's experiences in frustration in terms of ecological factors. This type of study, designed to investigate behavior under natural life conditions, suggests certain hypotheses about child behavior.

For example, it suggests that children may experience fewer frustrations than is commonly believed. It also suggests that an atheoretical research can lead to theories with wide implications.

PRIMARY AFFECTIONAL PATTERNS IN PRIMATES

HARRY F. HARLOW

It is our belief that the affectional life of primates—monkeys, apes, and man—is encompassed by four or five relatively separable affectional systems: the affectional pattern of infant for mother, the affectional pattern of child for child—peer for peer, the heterosexual affectional pattern, the maternal affectional pattern, and probably a paternal affectional pattern. We certainly can see the paternal pattern in human beings, and field studies of monkeys indicate that some large, dominant males show affectional as well as protective patterns toward infants within their own social groups.

We believe that each of these systems progresses through definable stages and that the nature and strength of each affectional system is in large part determined by different variables. Thus, for example, intimate physical contact, which is the variable of primary importance underlying the affectional pattern of infant for mother, is a variable operating to inhibit rather than enhance the affectional pattern of infant for infant. An infant monkey cannot form adequate affectional patterns for other monkey infants unless it can break the contact bond which has been established between it and the mother. Furthermore, if two infant monkeys are housed together very early in life, they develop strong contactual and clinging patterns which apparently delay, and possibly even destroy, full capability for normal infant-infant affection and possibly all other subsequent affectional patterns.

Today we are going to give primary attention to the analysis of the affectional pattern of the neonate and infant monkey for the mother. Within this affectional system there are four describably different stages, namely, the reflex, the attachment, the security, and the independence affectional stages. Although, with the exception of the reflex stage, there is a great deal of overlapping during the developmental process, we believe that criteria can be set up to justify the classificatory system which we propose.

There is little reason to doubt that the same or similar variables determining the infant monkey's affection for the mother operate in the human being and that the research findings obtained on the baby rhesus monkey during the first year of life have high generality to the human baby. The monkey baby differs from the human baby in two basic developmental characteristics: it is more mature at birth and develops approximately four times as rapidly. During the first year of life there is close similarity in the behavior patterns of monkey and child and in the developmental stages through which they go. This is not only true for affection, but it also holds for such emotional patterns as fear and anger and even for intellectual growth. The notable shortcomings of the monkey are the failure to develop a smiling response and a symbolic language, but only in these traits does the year-old monkey appear to be inferior to the year-old human infant. There is a third difference: the year-old rhesus monkey is a far more sentient and intelligent animal than the year-old human infant. As measured by objective learning tests involving processes not unlike those commonly employed in intelligence testing, the 4-year-old monkey is brighter than the 16-year-old human idiot, roughly on a par with the 8-year-old human imbecile, but inferior to the normal 4-year-old child. We concede that eventually some human

Harry F. Harlow, "Primary Affectional Patterns in Primates," *American Journal of Orthopsychiatry,* Vol. 30 (1960), pp. 676–684. Copyright, the American Orthopsychiatric Association, Inc. Reprinted by permission of the author and publisher.

beings—actually about 99 per cent—become brighter than monkeys, but this is attained only after time, patience, and considerable tender, loving care.

It would appear that in primates the primary tie of the infant for the mother is achieved through the operation of two dominant systems: a system associated with the breast and the act of nursing and a system developed around contact, or to use Bowlby's term, "contact-comfort." Both mechanisms can be demonstrated to be operating during the infant monkey's first day of life as a group of reflexes. Nursing is achieved through a system of specific reflexes, which may be evoked, especially in the hungry animal, by touching the lips, the cheeks, or above or below the lips of the neonate. Such contact stimulation elicits head turning, mouth opening, and oral clasping of the stimulating object, and sucking movements. If the face of a neonatal monkey is touched with soft cloth which is then gradually withdrawn, the animal follows in a forced, reflex manner and may even be drawn off the top of a table—and, let me assure you, caught before it hits the floor. The neonatal monkey also shows climbing responses, which no doubt assist it in attaining the breast and the support of its mother's arms.

Although most neonatal monkeys cannot walk, they show well-developed righting reflexes. If a neonate is placed on its back, it will immediately turn over and assume a normal prone posture. If, however, a baby monkey is placed on its back and then permitted contact with either a soft cylindrical object or a wire cylinder, it will clasp the object and make no effort to right itself. Thus, it appears that contacting and clinging are special primate postural reflexes. Another reflex belonging to the contact system is that of grasping by hands and feet when the palm of the hand or the plantar surface of the foot is stimulated. This reflex system guarantees contact to the mother's body and support when the mother animal's hands and arms are not available. We have seen dramatic illustrations of its reflex nature in the ten-day-old monkey that has climbed a little ladder and then tries to jump down. The front end of the body jumps, while the feet remain handcuffed to the rungs of the ladder through the operation of the grasp reflex. The front half of the body has come under voluntary control while the back half remains reflexive, in keeping with the law of cephalocaudal development.

Primary affectional patterns in primates

The reflex stage appears to drop out between the tenth and twentieth days of life and is followed by the stage of active, voluntary affectional attachment. One of our first interests was to evaluate the relative importance of the variables of contact-comfort. One way we tested this was to separate baby monkeys from their mothers at birth, placing them in cages with two different cubicles attached, one containing a cloth mother surrogate and the other a wire **mother surrogate**. The basic wire frame was left bare for the "wire" mother and covered with terry cloth for the "cloth" mother. The only additional difference was the faces, a variable which subsequent controlled researches have shown to be of no importance. In our original experiment, one group of four baby monkeys nursed exclusively from cloth surrogates and another group of four nursed exclusively from wire surrogates. The measure of affection was contact time on the mothers, recorded automatically and continuously. As can be seen from Figure 1, nursing appeared to be a variable of little or no measurable importance, particularly after the first three weeks. Whether the babies nursed from the cloth mother or the wire mother, they came to spend 15 to 17 hours a day on the cloth surrogate. Conversely, whether or not the babies nursed from the wire surrogate, they did not spend more than 1 or 2 hours a day on her. This latter fact is extremely striking since psychological theory would predict that the appearance of the mother's face and body would become associated with the satisfactions obtained from the act of nursing, leading to the formation of affectional bonds between the infant

and the nursing surrogate. The data of this particular experiment give no evidence whatsoever for the formation of such a bond.

In an effort to demonstrate that the breast and activities associated with nursing were variables of measurable importance in the infant's affection for the mother, we conducted a further experiment holding constant the contact-comfort variable. We raised babies with two cloth surrogates—one with a green terry cover and one with a brown cover. Half the babies nursed on the green surrogate and half on the brown surrogate. The results are extremely striking. There were no color preferences, but early in life

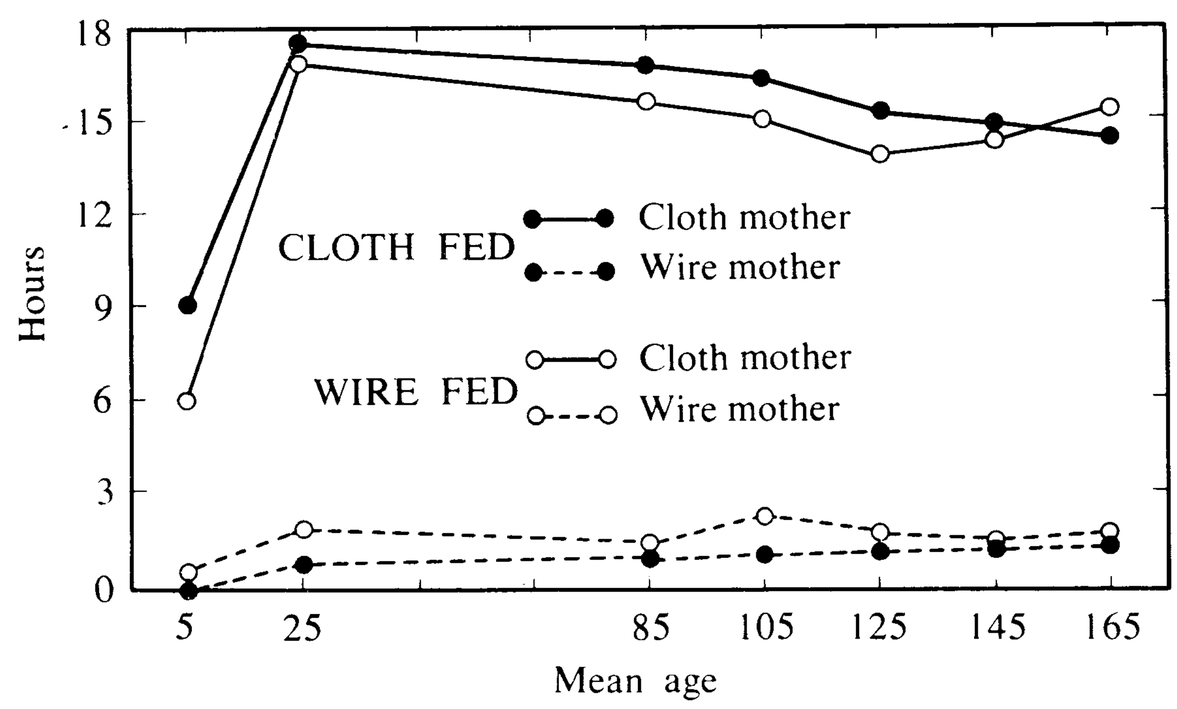

Fig. 1. Time spent on cloth and wire surrogate mothers.

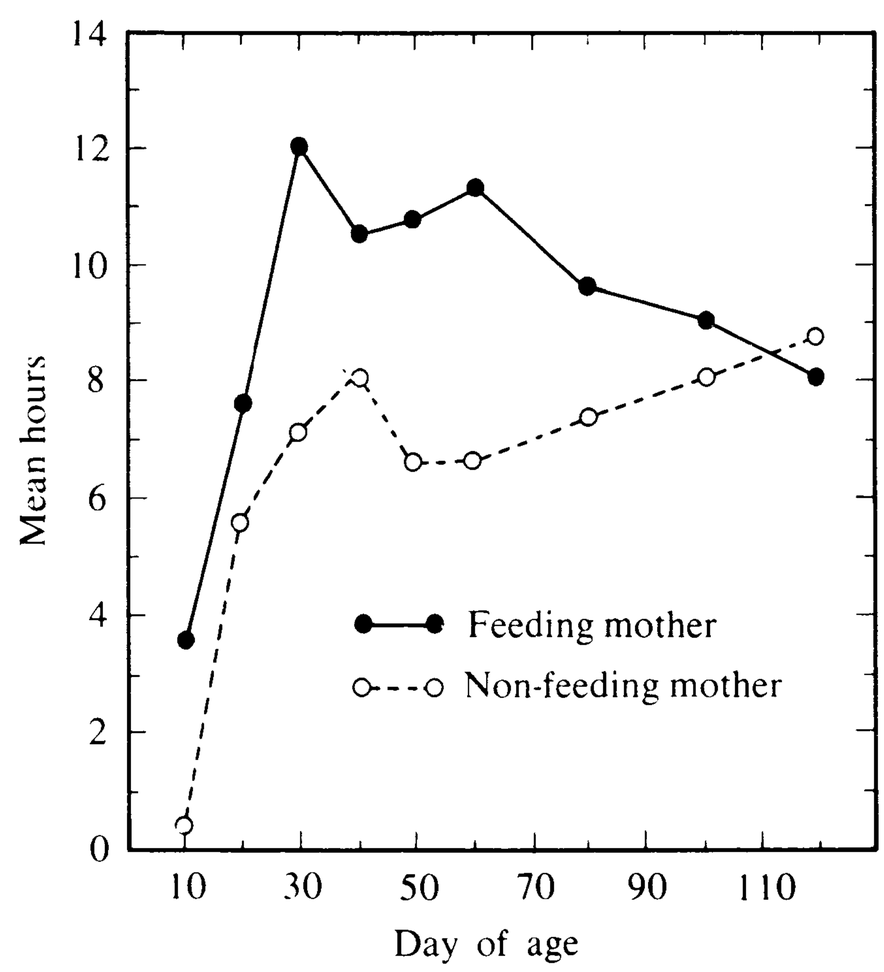

Fig. 2. Time spent on differentially colored surrogate mothers.

there developed a statistically significant preference for the lactating cloth surrogate (Fig. 2) as measured by contact time in the living situation. This preference disappeared by 80 to 100 days of age and never reappeared. Actually, tests in the open field suggest that even earlier than 3 months this variable has ceased to be of any importance.

These are extremely striking data since nursing was continued for 180 days and all the conditions essential for the formation and maintenance of derived motives existed throughout this time. This was the first of the collapsing variables which we discovered, and it illustrates the fact that we cannot understand the variables influencing behavior unless we trace their roles throughout their course. A variable which is of vast importance at one stage of development may become a variable of absolutely no importance at another. . . .

Another variable which we attempted to measure was that of rocking motion. We did this in two situations: the first measured the responsiveness of the infants to two cloth surrogates, one stationary and the other constantly rocking. The second measured the responsiveness of the baby monkeys to two cloth-covered planes or, to use different terms, cribs or cradles. The data comparing rocking and nonrocking planes are presented in Figure 3. The data for the rocking and nonrocking mother surrogates are not included here, but they are almost identical. It is obvious from the figure that rocking motion is a variable of importance during the first 150 to 180 days of life, and thereafter it also collapses—it ceases to be a variable of measurable importance regardless of the test situation in which we attempt to assay it. The mother monkey moving about in the wild, of course, gives its infant a large amount of the kind of kinesthetic and vestibular stimulation that would be supplied by rocking. Perhaps, during the second hundred days of life, the monkey itself becomes so mobile and supplies itself with so much proprioceptive stimulation that the additional movement provided by mechanical means is completely insignificant.

In an effort to assess the importance

of the variable of clinging, we compared the responsiveness of a group of infants to a cloth surrogate and a cloth plane, both stationary. The data shown in Figure 4 represent an extension of our principle of the collapsing variable—for here we see that the importance of the two variables reverses, beginning at about 180 days of age. Early in life the babies show a clear-cut preference for the planes, which are less steeply angled than the mothers' bodies and probably provide a better sleeping and resting surface. But from 180 days on, the preference shifts from one for the planes to one for the cloth mothers, whose body form permits the tight clinging and clasping denied in the crib situation.

Thus, we have been able to trace the importance of variables relating to contact-comfort, nursing, rocking motion, and clinging. It can be shown that the nursing and rocking variables are important at certain developmental stages, but it is perfectly obvious that they are not the specific variables which provide the extremely binding and long-term attachment that the infants come to feel for their properly proportioned, contact-comfort-providing, cloth surrogate mothers.

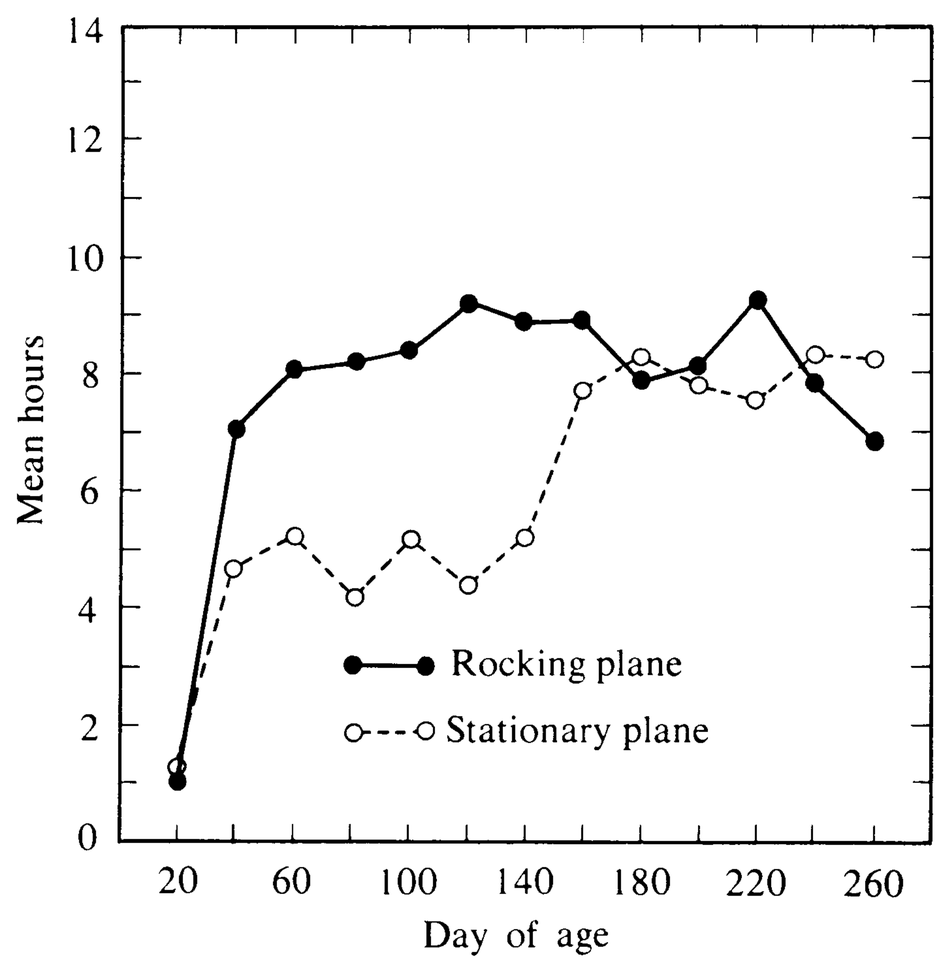

Fig. 3. Time spent on rocking and stationary planes.

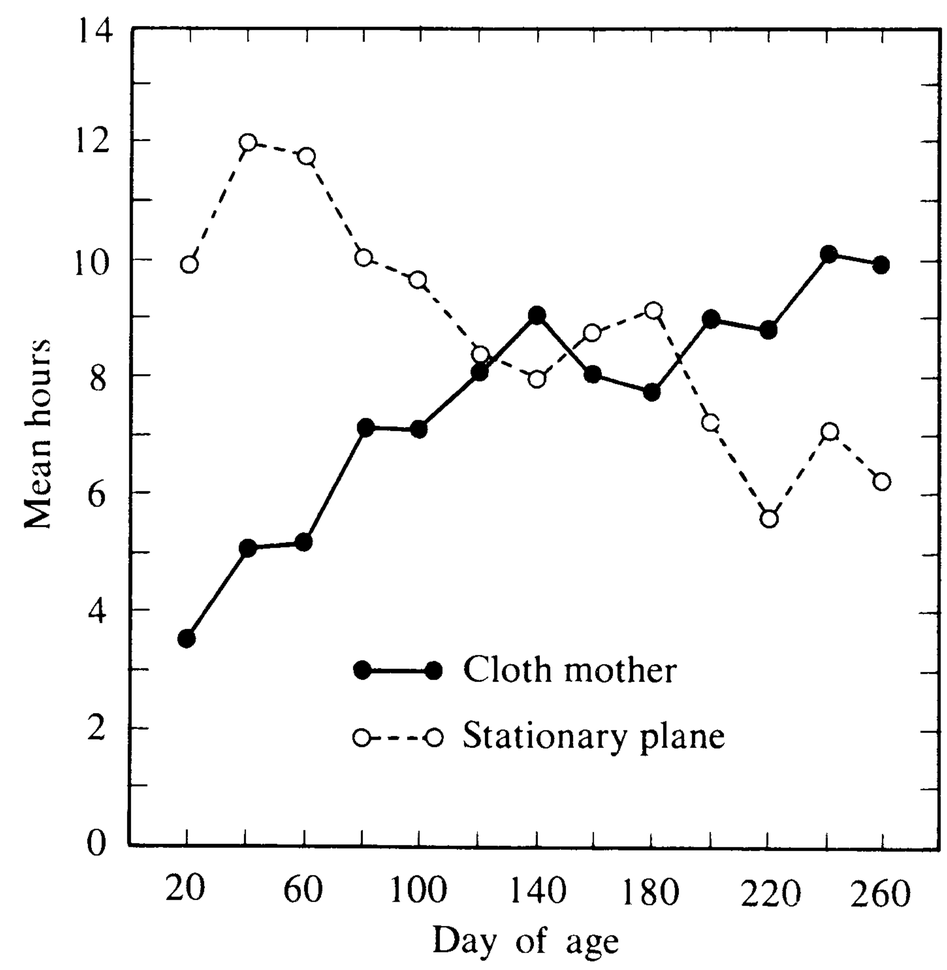

Fig. 4. Time spent on cloth surrogate mother and cloth stationary plane.

After 180 days of age we separated all the baby monkeys from their surrogate mothers and tested for affectional retention at 30-day intervals during the following six months and at 90-day intervals during the subsequent year. The last day of each of these retention intervals was devoted to retention testing, including time spent with the surrogate in the living situation, home-cage fear tests, and open-field tests, and the infants had contact with the mother surrogates only during this time. The data from one of these tests—that of time spent on the mother surrogates on test days—are shown in Figure 5. These data clearly demonstrate that separation for an 18-month period has in no sense whatsover destroyed—perhaps not even diminished—the strength of the affectional attachment. This is a remarkable finding, since there exist in the psychological literature no comparable data for permanence of attachment and retention except possibly in the case of extremely strong fears or phobias. It is comforting to know that mother love, once formed apparently remains. Mothers should be cheered when their babies are kicking them on the shins, telling them that they do not love them, or stating that they wish they were dead, to know that the infant is hopelessly trapped. No matter what he does or says and no matter how little he understands it, the infant belongs to the mother forever, insofar as the primary primate affectional bonds are concerned.

The responses of the infants to the cloth surrogates which we have described

so far represent behavior characterizing the attachment stage of affectional development. Attachment behaviors have also been measured in other test situations (described in earlier publications), including a home-cage fear test in which the animal is suddenly presented a frightening object in its own living cage. Under these circumstances, even the young infant goes to the cloth mother and attaches. Soon after the initiation of the attachment stage, one can see the beginnings of the development of the third affectional stage, the stage of security. Within minutes or even seconds after attaching, the subject's hands and body relax and the monkey will visually explore the frightening stimulus with little or no sign of anxiety.

Similar behaviors are seen in the open-field situation—a room 6 ft. by 6 ft. by 6 ft. with a half-dozen playthings scattered about. If the cloth surrogate is in the room, the infant rushes to her, clings, and rubs its body against her. As in the home-cage fear situation, it is only a matter of minutes or fractions of a minute before the animal relaxes and fears disappear. These security responses show progressive development, and at an appropriate level the infants actually leave the cloth mother after originally contacting her and go out and explore the open field and manipulate and play with the various objects. On the basis of earlier researches, we know that monkeys will not explore or manipulate even under conditions of mild anxiety, and the capability of an inanimate surrogate mother to instill feelings of security in the infant is indeed remarkable.

This capacity of the cloth surrogate to give security is admirably illustrated by behaviors observed in another test, which we call the "open-field fear test." This situation is simply the open-field test with the cloth surrogate against the wall in the far corner of the room shielded by a large Plexiglas screen adjacent to which is one of several mechanical "monsters."

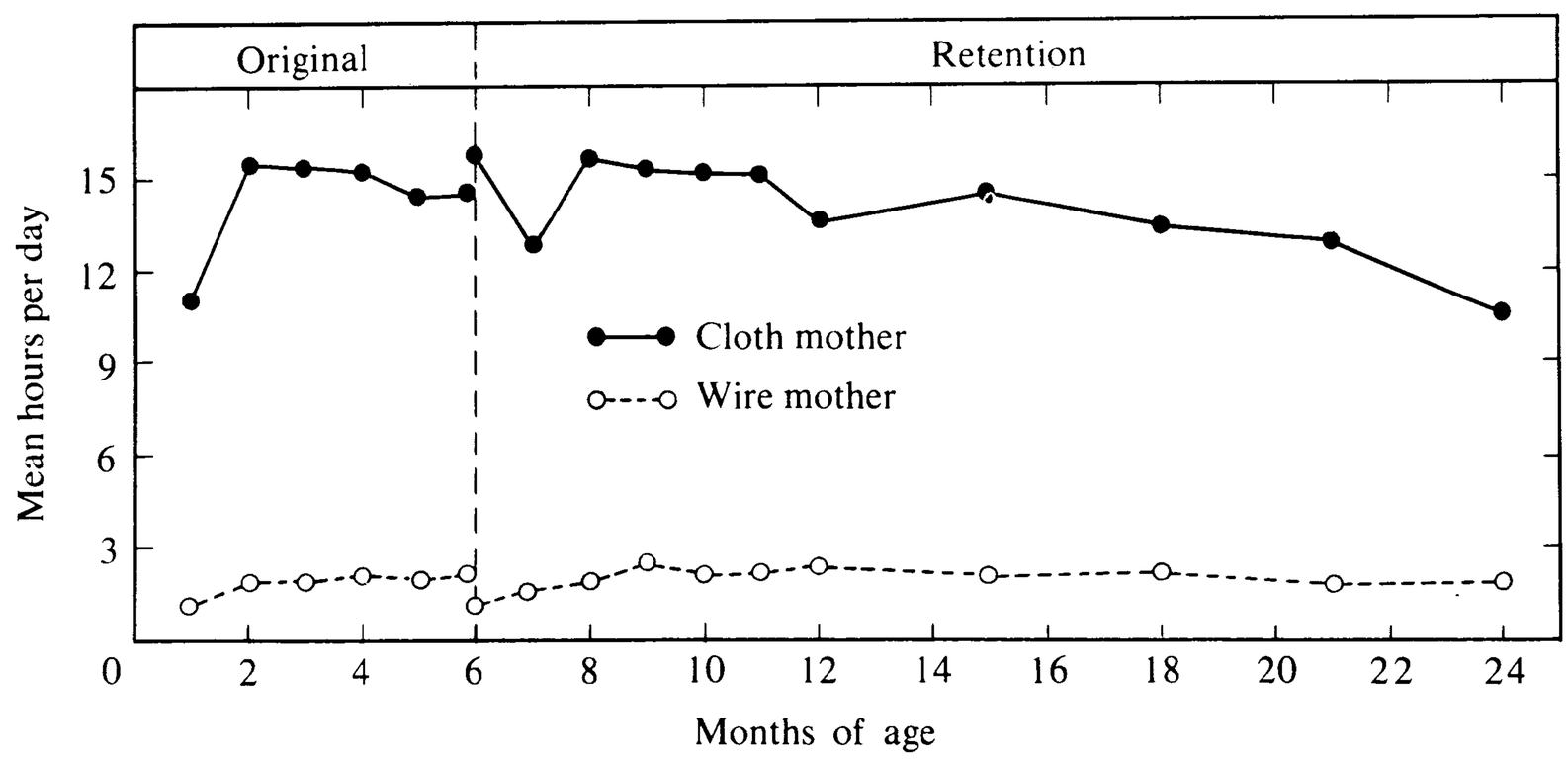

Fig. 5. Retention: time spent on surrogate mother.

When the monkey is released from the start box, it can reach the cloth mother only by running around the screen and the monster. This is a situation which terrifies the infants. When they are released from the start box, they typically freeze with fear; after a time, they pull themselves together and make a mad dash, sweeping around the Plexiglas shield and the feared object. As in the open-field test, they first cling tightly to the cloth mothers, then gradually relax, but often after a minute or two of contact or even less, their security is such that they will leave the surrogate and go out and play in the room. Indeed, in many cases they not only explore the room, but they will actually go and explore and manipulate the monster, the very object that a minute or two before had left them in a state of abject, frozen terror. Again, the capability of these inanimate surrogates to change completely the nature and direction of the responses is remarkable. It is striking indeed to see an animal which one minute is frozen in terror, go

out the next minute and actually manipulate the fear-producing object. Three of the babies, after they had contacted their mothers and their fears had disappeared, even tore these frightening monsters to pieces—at a cost of $3.95 a monster, a price which we considered modest in terms of the nature and importance of the phenomenon.

This open-field fear test has proved particularly useful in measuring the long-term retention of the affectional responses. We have data in this situation on infants that have been separated from their mothers for 18 to 24 months or more. By this time, the infants have grown into very full-sized "babies," and they may be as large as, or even larger than, the surrogate mothers. Even so, when they are released, they rush wildly to the mother and cling and clasp her body before their fears are dissipated and terror is replaced by manipulation and exploration of the field. In a number of our animals, a very striking phenomenon has appeared: the monkeys picked up the cloth mothers and carried them about the room as they made their explorations. Without the cloth mothers, they were unhappy and ill at ease. Carrying the cloth mothers, they showed no anxiety whatsoever; indeed, they wore their mothers about their bodies as if they were a surrogate St. Christopher's medal.

THE DEVELOPMENT OF FEAR IN MAN AND OTHER ANIMALS

GORDON W. BRONSON

A potential to fear the strange must be regarded as inherent in many animal species—it is no longer tenable to maintain that all instances of fear have roots in a painful experience. This article examines the nature of the fear potential: it traces the development of the fear of novelty in young animals and identifies factors which can affect the course of such development. The relevant evidence is reviewed for those mammalian species on which sufficient developmental data are available: humans, other primates, and dogs.

Whether one finds similarities or differences in the fear reactions of animals across this range of species depends on the level of detail at which behavioral comparisons are made. The present analysis focuses on the general form of aversive reactions, thereby stressing similarities in the developmental patterns of these animals. The rather limited material documenting fear behavior in humans appears in sharper focus when viewed in the context of developmental patterns observed in other species.

Fear is identified here as an aversive reaction to novel visual patterns. Aversive reactions to nonvisual stimuli, such as pain and sharp sounds, which appear before the fear of novelty has developed, are called "distress reactions." From the evidence reviewed, such distress reactions appear to be precursors to the fear of novelty. Learned fears, in the traditional

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sense of the term, are not examined in this survey.

The Development of Fear Under Normal Rearing Conditions

Studies of the different species are reviewed separately to minimize confusion arising from differences in maturity at birth and variations in the rate of development. Ages at which significant sensory and motor developments occur in the various species provide rough guides for making cross-species comparisons.

Humans

While the evidence is not conclusive, it seems probable that an encoding of the familiar is prerequisite to the fear of novelty (Bronson, in press). If so, infants must be capable of visual memory before a fear of visual novelty can develop. The first clear evidence of visual memory appears in human infants at about 2 months of age: visually induced smiling begins at around this age (Ambrose, 1961), showing that visual patterns can now be recognized. Similarly, in a study by Fantz (1964), infants less than 2 months old showed no difference in their reactions to new versus previously presented visual patterns, while after this age they spent less time gazing at "familiar" than at novel patterns. (Note that studies which indicate that infants can distinguish visual patterns in the first weeks of life [e.g., Fantz, 1958; Stechler & Latz, 1966] are not evidence of an ability to encode such patterns; furthermore, it is quite possible that these early visual reactions are mediated by subcortical systems and do not imply true pattern perception [Bronson, 1965].)

Strange persons produce the earliest fear reactions reported for human subjects; however, it is apparent that infants can distinguish a stranger from mother some time before the age when strangers provoke fear. Ambrose (1961) reported an increasing reticence to smile at strangers beginning shortly after age 3 months in home-reared infants and after age 4 months in institution-reared infants. Polak, Emde, and Spitz (1964) also found that smiling at strangers decreased after age 4 months in their institution-reared infants. Although visual discrimination is clearly implied by the waning of the smiling response to strange faces, Ambrose (1961) was reluctant to infer the existence of fear at these early ages, since the infants showed no reaction other than the reticence to smile. Bridges (1932) has made the same reservation, noting that her institution-reared infants could distinguish a strange face by 6 months but did not show signs of fear (i.e., crying, body rigid) until around 7 months.

Other studies confirm that clearly defined fear reactions first appear some months after the age when smiling at strangers begins to wane. Polak et al. (1964) and Spitz (1946) reported fear reactions to strange persons beginning at about 7 months in institution-reared infants, and perhaps somewhat earlier in home-reared infants (Spitz, 1946). Schaffer and Emerson (1964) found that about 15 per cent of their sample of home-reared infants showed a fear of strangers (crying, turning head away) as early as 6 months; the majority, however, did not give this reaction until around 8 months of age. The authors added that the initial fear of strangers occurred about 1 month after the age when infants could no longer be comforted by a strange person in mother's absence, offering further evidence that a fear of strangers follows some time after the age when the infant has distinguished mother as a specific person. Freedman (1961) reports a range of 7–10 months for the first appearance of crying and stiffening of the body at the approach of a stranger. Morgan and Ricciuti (in press) observed infants at 4½, 6½, 8½, 10½, and 12½ months as a stranger approached: the two youngest age groups gave positive responses; fearfulness first appeared at 8½ months and increased in intensity through age 12½ months. Fear reactions were more intense when infants were alone in the crib than when seated on their mothers' laps. Bay-

ley (1932) identified those instances of crying, during monthly tests of physical and mental development, which were provoked by the strangeness of the examiners and their procedures. In spite of efforts to allay such fears, the incidence of crying increased from around 10 per cent at 5- and 6-month testings to over 20 per cent at 9, 10, 11, and 12 months.

These studies are in rather close agreement in indicating that for most infants a fear of strange persons appears at around 7–9 months of age. Experimental studies of fear reactions to novel situations or strange objects during this age range have not been found, but anecdotal evidence suggests that such reactions develop along with the fear of strange persons.

Although fear reactions to visual stimuli seem to emerge gradually during the second 6 months of life, aversive reactions to nonvisual stimuli are present much earlier. Since it will be argued that these early "distress reactions" are precursors to the fear of novelty, studies of infant distress must be examined. Bridges (1932), observing infants in a foundling home, described a pattern consisting of crying, muscle tensing, and diffuse movements which could be provoked by discomfort, pain, or sharp sounds; she concluded that such distress behavior was clearly present by 3 weeks of age, and perhaps occurred even earlier. Rocking, patting, wrapping in warm blankets, and the opportunity to suck seemed to quiet distressed infants. Subsequent experiments give additional support to Bridges' observations: Ambrose (personal communication, 1967) and Gordon and Foss (1966) have demonstrated the quieting effect of mechanically rocking newborn infants; Cohen (1967) and Kessen and Leutzendorff (1963) reported a decrease in activity when a rubber nipple was inserted in the mouth of the neonate; Bridger and Birns (1963), causing distress by immersion of a foot in ice water, could quiet the infant either by inserting a nipple in the mouth or by rocking the head from side to side; McKee and Honzik (1962), in a review of sucking behavior in humans and other mammals, concluded that sucking quiets infants (human and otherwise) suffering from diverse types of discomfort. These procedures, which are effective in quieting infants without necessarily removing the cause of the distress, are components of the normal maternal activity in response to an upset infant.

The mothering activities which quiet distressed infants involve direct physical contact. At later ages—that is, from roughly the end of the first year onward—common observation indicates that the mere presence of the mother within the child's visual field can often allay tensions provoked by novel situations. This development evidently depends upon the formation of a visual attachment to the mother; hence the age at which such attachment develops is an important parameter affecting fear behavior. Schaffer and Emerson (1964), in a study of home-reared infants, concluded that most infants show an attachment to the specific mothering person by about the third quarter of the first year. Since this is also the age at which visual fears develop, it is evident that as the infant begins to be disturbed by visual novelty he also begins to find comfort in a visual awareness of the mother's presence.

Monkeys

Monkeys are born relatively mature and develop rapidly. Harlow (1962) and Hinde, Rowell, and Spencer-Booth (1964) observed visual exploration at 3 days; and Mowbray and Cadell (1962) reported good visual orientation toward small objects by about 1 week after birth. At 10 days, the monkey walks about easily (Hinde et al., 1964).

The only available reports of early fear reactions in monkeys concern animals which were reared apart from their mothers. While at later ages the quality of the fear reactions of such animals differs from normal patterns, in the absence of other data it is assumed that the age at which fear reactions first appear is not

greatly affected by an early separation from the mother.

Bernstein and Mason (1962) observed a fear grimace and screech when small objects were introduced into the home cages of 1-month-old monkeys (the earliest age tested); the response was greater to objects of a more complex shape. Harlow and Harlow (1965) reported fear of a mechanical bear beginning at about 20 days; crouching if alone in the cage, and "fleeing" to the cloth mother-surrogate if it was present. (Since this early fleeing did not occur in the absence of the mother-surrogate, the behavior was evidently aimed at gaining maternal security rather than at retreat from the frightening object.) The authors noted that fear reactions became stronger throughout the third and fourth months and that fear was less intense in the presence of the mother-surrogate. On the basis of these two studies, it can be tentatively concluded that the fear of novelty in monkeys appears at about 3–4 weeks of age, that is, some 3 weeks after the capacity for the perception of visual patterns.

Distress reactions in infant monkeys have not been specifically studied; however, Hansen (1966) noted that monkeys raised with cloth mother-surrogates showed convulsive jerking, frequent distress calls, and mouthing of their own bodies, particularly during the first month. Such reactions are not characteristic of mother-reared animals. Maternal activities which might comfort infant monkeys are implied in Harlow's (1962) observation that monkeys prefer mother-surrogates which are cloth covered and which rock.

Harlow and Harlow (1965) concluded that attachments begin to develop during the first weeks of life; by 3 weeks the frightened monkey flees to the mother. Sackett, Porter, and Holmes (1965) have shown that mother-separated monkeys, who had had contact with humans for only the first 3 weeks of life and had then remained relatively isolated until tested when 2½ years old, turned toward a human rather than another monkey when placed in an apparatus offering these choices. A second group, raised in pairs following the initial 3 weeks of human contact, oriented toward the monkey in the above test. These results indicate that attachments do begin in the initial weeks, but they also indicate that later experience can shift the object of allegiance.

Dogs

For the first week or so puppies cannot see, and they creep about with little use of their hind legs. While breeds differ somewhat in maturation rate, by the third week eyes are open, objects can be seen at some distance, and the pup can stand and walk fairly well (Scott & Fuller, 1965).

Evidence on the ages at which both fear and attachment behaviors develop is presented in a study by Freedman, King, and Elliot (1961). Cocker spaniel pups from five litters being raised by their mothers in a large field were brought into a home for 1-week periods beginning at 2, 3, 5, 7, and 9 weeks of age. Pups who were 2 and 3 weeks old showed little reaction to the human handler; 5-week-old animals showed an initial wariness but were soon attracted to him; the 7- and 9-week-old pups avoided the handler for the first 2 or 3 days. Fear of strange (human) objects seems, on this evidence, to develop first at around 5 weeks of age and to increase in intensity thereafter.

Testing of all pups for attraction to humans at 14 weeks of age gave evidence on the age limits within which attachments can be formed. All of the pups whose initial human contacts occurred at ages 2 through 9 weeks were able to form attachments to humans when contact was re-established beginning at 14 weeks; a control group whose initial experience with humans began at age 14 weeks failed to overcome their fear despite continued daily attention from the handler. It appears that attachment begins to develop as early as 2–3 weeks of age and can still occur as late as 9 weeks,

an age when the fear of novelty is moderately well developed.

A study by Elliot and Scott (1961) also provides evidence on the age at which fear first appears in dogs. The authors measured the amount of whining, yelping, and general movement when pups were briefly separated from the mother dog at various ages. At age 3 weeks, reactions were of equal intensity whether the pup was left alone in the home pen or put in a strange environment. By 4 weeks, both vocalization and general activity increased considerably when the pup was placed in a strange environment, but they remained at the lower (3-week) level when the pup was left alone in the home cage—an indication of the emergence of a fear of novelty. As age increased, the responses to novelty changed: vocalization increased to a peak level at 7 weeks and then waned; motor activity continued high, at older ages taking the form of frantic efforts to escape from the strange environment. These data set the beginnings of a fear of novelty at about age 4 weeks, slightly earlier than the initial fear of humans reported by Freedman et al. (1961). On the assumption that the earlier age reflects a procedure more sensitive to the detection of fear, the fear of novelty in dogs begins at around 4 weeks of age, that is, about 2 weeks after development of the capacity for perception of visual patterns.

Some evidence is available on distress in young puppies. Welker (1959) conducted a study of 1–3-day-old pups, noting the causes of distress and the reactions given at this age. Temperature appeared to be a major variable: becoming either too hot or too cold initiated whining and circular creeping. In normal circumstances, this behavior produced either maternal assistance or readjustment within the group. The author argued that tactile contact was of importance only in guiding movement and was not sought for its own sake. Marr (1964) found that 3–4-week-old pups, restrained by placing a hand under the dog's stomach but leaving its feet touching the floor, could be quieted by stroking the back, or by rocking gently forward and backward.

Summary of Normal Development

On the evidence available, the development of fear behavior follows similar patterns in humans, monkeys, and dogs.

A fear of visual novelty develops some time after the ability to perceive visual patterns. The interval varies with the complexity of the animal: roughly 6 months in humans, 3 weeks in monkeys, and 2 weeks in dogs. Since the conditions under which fear was demonstrated varied considerably for the different species, these intervals can be regarded as only approximations; however, the ordering of the species is probably correct. (Such ordering has been interpreted by Hebb [1949] as support for his theory that more complex nervous systems require more extensive visual experience to develop codifications of the familiar and that the fear of visual novelty can only appear after a sense of the familiar has developed; Hebb's hypothesis is examined in detail elsewhere [Bronson, in press].)

Distress reactions appear at or shortly after birth in response to diverse types of disturbing stimuli. The range of stimuli producing distress cannot be adequately compared across species, since data are incomplete, but extreme temperatures and pain are probably universal; visual novelty is not effective. Sucking activity, or being rocked, will quiet distressed mammals, and contact with a soft object also appears to be effective for primates.

The process of attachment formation normally begins before the fear of novelty has developed. Experiments on dogs and monkeys show that attachments can also be formed for at least a limited period after the age when fear reactions begin to appear, and common observation of the behavior of adopted infants indicates that this is also true for humans. The fear of

a novel stimulus is reduced in the presence of objects to which attachments have been formed.

Effects of Maternal Deprivation and Early Sensory Restriction on the Development of Fear

Fortunately, the experimental deprivation of human infants is not possible; but, as a consequence, reports of the behavior of humans reared in unusual circumstances are often difficult to interpret. Since studies of chimpanzees reared apart from their mothers provide a useful perspective for understanding abnormal patterns of human development, experiments conducted on chimpanzees are presented before consideration of the data on humans.

Chimpanzees

Too little is known about the normal development of fear reactions in chimpanzees to justify their inclusion in the preceding section; however, studies of the effects of early maternal deprivation can be interpreted without detailed knowledge of normal developmental patterns.

A number of chimpanzees at the Yerkes Laboratories were separated from their mothers at birth and raised in restricted environments to about 2 years of age. The degrees of restriction varied: some were raised with a companion chimp, some in bare cages, some with abstract patterns projected onto cage walls, and some could receive a visual reward by pushing levers. Later tests showed that the behavioral differences among animals in these different groups were minimal. The variables that emerged as significant were common to members of all experimental groups: separation from mothers at birth, the limitation of experience by confinement in the rearing cages, and no contact with human handlers.

In a series of papers (Menzel, 1963; Menzel, Davenport, & Rogers, 1963a, 1963b), the behavior of these 2-year-old animals was compared with that of wild-born chimpanzees of about the same age. Presented with novel objects either in the home cage or in new surroundings, or introduced into a strange empty room, the experimental animals reacted by crouching, rocking, and swaying, with no attempt to retreat from the novel objects; several hours of exposure produced little change in behavior. Wild-born animals of the control group showed less fear: they began by actively moving about, followed by approach and exploration of the new objects; no stereotyped ryhthmic behavior occurred. The authors concluded that the early separation from the mothers, rather than the general restriction of the early environment, was the essential factor responsible for the development of stereotyped behavior patterns (i.e., rocking and swaying). Although these chimpanzee experiments confounded maternal separation and sensory restriction, there is evidence giving support to the author's interpretation. Berkson, Mason, and Saxon (1963) observed these same experimental animals after they had lived for 3 years in large outdoor cages in the company of other animals: stereotyped behavior remained the dominant response when the chimps were frightened by a novel situation. Davenport, Menzel, and Rogers (1966) found that stereotyped behavior did not develop when normally reared 1½-year-old chimps were kept in isolation for a 6-month period. These latter two studies seem to eliminate confinement in a monotonous environment per se as the primary cause of stereotyped behavior, but they do not rule out *early* sensory restriction, imposed through an initial postnatal period, as the significant factor causing stereotypy. However, since Davenport and Menzel (1963) have reported that a review of the laboratory records showed that stereotyped behavior never occurred in those animals which had been reared in cages with their mothers, but was always observed in chimps which had been separated from their mothers at birth, it seems reasonable to conclude that early maternal deprivation was the primary cause of the stereotyped behavior.

In addition to the abnormal form

of their fear reactions, the above experimental animals also seemed to be more intensely afraid: the wild-born chimps soon mastered their fear and began to explore the novel objects, whereas the experimental animals remained frightened for several hours. It must be recognized that, although the abnormal form of the fear reaction can be reasonably attributed to maternal deprivation, it is not clear from the available evidence whether the intensity of the fear was a consequence of maternal separation or of the early environmental restriction.

Daily observations of these same mother-separated animals, made while they remained undisturbed in their home cages, show the evolution of patterns of stereotyped behavior from infancy until the animals were released from isolation at about 2 years of age (Davenport & Menzel, 1963). These behaviors fell into two main categories: rhythmic rocking, swaying or turning movements, and other repetitive activities (primarily thumb or toe sucking and exaggerated chewing movements). Thumb or toe sucking was the first to develop, appearing some time during the first or second month. By 3 or 4 months, rhythmic activities of the entire body began to appear, first in the form of "pivoting" while in a horizontal position, then, in the second 6 months, as rocking or swaying. By the second year, mouthing activities had largely disappeared, apparently having been superseded by the rhythmic rocking or swaying. Developmental charts of individual chimpanzees show that each animal produced a diversity of stereotyped behaviors during the first year, with particular patterns of rocking or swaying emerging as characteristic of individual animals during the second year.

It is evident that rhythmic behavior occurred in mother-separated animals even when alone in a familiar environment. However, Berkson and Mason (1964) have shown that the intensity of such activity increased when deprived chimps were presented with visual novelty or a loud noise, or when they were hungry, or after an amphetamine injection. These authors concluded that intensity of stereotyped behavior is a function of the general level of arousal.

To summarize: the early appearance and the pervasiveness of stereotyped behavior in chimpanzees raised without mothers imply that such animals are disturbed from an early stage of development, that even in the familiar home environment they suffer chronic mild tension, and that the effects of early deprivation carry over into adulthood. That fear provokes stereotyped behavior in deprived animals is shown by the increased intensity of these reactions in novel situations.

Humans

The studies of humans reared in institutions where mothering was minimal have not specifically focused on fear behavior. However, in view of the reactions noted in chimpanzees, the high incidence of rocking behavior found in institution-reared infants assumes a particular significance.

An early study by Bridges (1932) described the development of rocking in institution-reared infants: 2- to 3-month-old infants moved their heads from side to side; by age 5 months they would sway while lying down; and 9-month-old infants would rock from a sitting position, sometimes humming rhythmically. Later studies support these observations and emphasize the pathognomic significance of such behavior. Provence and Lipton (1962) compared the development of infants in an institution with that of normal infants; among the distinguishing characteristics was the high incidence of rocking, which appeared in some institution infants at 4 or 5 months of age (while lying down) and was observed in all infants by age 8 months (in a sitting position). Thumb sucking declined as rocking developed, a phenomenon also observed in the maternally deprived chimpanzees. Brody (1960) proposed a continuum ranging from normal infant reactions of rocking or bouncing when excited, through disturbed repetitious

rocking which seemed to "lull" the infant, to agitated energetic rocking, sometimes with head banging, where the infant seemed temporarily beyond external influence. She considered the latter two forms to be products of unusual patterns of mothering, and she noted that they may be accompanied by a dominance of tactual over visual modes of establishing contact with the environment.

Hutt and Hutt (1965) noted that stereotyped behavior, including repetitive movements of various parts of the body as well as rocking, is a frequent characteristic of autistic children. In an experimental study of 3- to 5-year-old autistic children, they found that stereotypy increased as the environment was made more complex by adding first a box of blocks and then a (passive) person to an originally empty room. It seems that novelty heightens stereotyped behavior in autistic children and that even moderate degrees of visual novelty increase tensions in such individuals. Bender (1947) noted that "whirling," as well as rhythmic body activity, is a frequent characteristic of schizophrenic children.

The observation by Brody (1960) that disturbed infants avoided visual exploration of the environment is of particular significance, since such self-imposed restriction will effectively decrease the perception of novelty. Others have made similar observations. Schopler (1965), reviewing the accepted diagnostic signs of autism, noted as characteristic the obsessive desire for maintaining a familiar visual environment and also the marked preference for touch, taste, and smell as modalities for relating to the environment. In an experimental study of 7- to 9-year-old children diagnosed schizophrenic, Schopler (1966) demonstrated a marked avoidance of visual modes in the exploration of novel objects, but normal use of tactile exploration. Hutt and Ounsted (1966) concluded that the characteristic eye avoidance of autistic infants and children is also an expression of excessive fearfulness.

In light of the material presented earlier showing that rocking is highly effective in soothing distressed infants and the evidence that maternal deprivation produces rhythmic rocking in chimpanzees, it seems reasonable to conclude that chronic rocking or swaying in young disturbed humans is an attempt to reduce tensions associated with some form of maternal deprivation. Furthermore, since such activities increase in disturbed children (and chimpanzees) when they are confronted with even moderately novel situations, and since it has been shown that the perception of visual novelty is avoided if possible, it can be inferred that such disturbed children are also characterized by an excessive fear of visual novelty.

Monkeys

A review of experiments conducted on monkeys supports the view that rearing apart from mothers produces animals prone to stereotyped rhythmic behavior and that such animals are also unusually afraid of visual novelty. Mason and Green (1962) reported that mother-separated monkeys, raised alone in cages that allowed an open view of the laboratory, remained largely immobile, clutching themselves, and rocking and swaying, when placed in an empty room at 1–2 years of age. A control group of wild-born monkeys of about the same age moved actively about the room. Similarly, Mason (1960) found that 9-month-old monkeys, raised apart from their mothers but in cages that allowed sight of the laboratory, responded to a strange environment by crouching and clasping themselves, rocking and swaying, and sucking parts of their bodies. In contrast to these effects, Jensen and Tolman (1962) found that monkeys raised with their mothers in small cages showed no crouching, rocking, or swaying when placed in strange cages at 5 or 7 months of age, although they emitted piercing screams when separated from their mothers. Green (1965) reported crouching and trembling to be the primary reaction of 2½-year-old mother-deprived

monkeys presented with novel objects in a strange cage, whereas 1½-year-old animals raised in visually restricted environments, but with mothers present to age 4½ months, showed no crouching and seemed less disturbed by the novel situation. Griffin and Harlow (1966) observed stereotyped behaviors, including oral activities, in mother-separated monkeys beginning in the first month; the intensity of stereotyped behavior increased when animals were transferred to more open cages at age 3 months, while general exploratory activities dropped dramatically; one animal died following transfer, probably from a refusal to eat in the strange surroundings. Harlow and Harlow (1965) reported crouching and rocking in response to novel situations by monkeys raised with wire mother-surrogates; animals reared by cloth "mothers" also showed these reactions, but apparently with less intensity.

It is clear that early maternal deprivation produces enduring effects on fear behavior. The possible contribution of early environmental restriction in the promotion of enduring fearfulness, however, is more difficult to assess. Only one experiment conducted on monkeys provides clear evidence that such restriction can, in some circumstances, produce enduring effects on fear behavior. Mason and Sponholz (1963) compared the behavior of two groups of monkeys raised without mothers; members of one group were raised in cages allowing sight of other monkeys, while monkeys of the second group were raised in total isolation. When tested by pairing with another isolation-reared monkey at 16 months of age, all of the monkeys showed the crouching and rocking characteristic of mother-deprived animals; however, the less restricted animals were able partially to overcome their fear and engage in some social activity. Even after many hours together, the previously isolated animals did not develop social responses. Of particular interest is the observation that after a subsequent 2 years of living in a cage that permitted sight of other animals, each originally isolated subject was still "traumatized" when tested with another monkey. For subjects raised without mothers, it appears that rearing in visually limited environments produces a heightened fearfulness which is not easily reversed by subsequent experience. It remains to be shown, however, that such early environmental restriction would have enduring consequences for animals raised with their mothers.

The development of fear in man and other animals

Observations of the development of monkeys illustrate another phenomenon: the changing pattern of fear reactions with increased age. Bernstein and Mason (1962) described the development of fear reactions in mother-deprived monkeys which were reared in separate cages but with no attempt to grossly restrict sensory experience. Behavior was observed when small objects were introduced into the home cages. Monkeys 1 month old gave a fear grimace and screech, sometimes accompanied by a convulsive jerking of the entire body; there was no attempt to move away from the object. At 3 months, the response was again a fear grimace and screech, plus crouching and rocking behavior; as at 1 month, there was no attempt to retreat from the source of fear. Animals first tested at age 7 months showed retreat reactions plus components of aggressive behavior: ears went back, and "barks" replaced the screech, although the fear grimace remained present; crouching and rocking were less frequent. Active avoidance, with components of threat behavior, became the dominant pattern of later ages, although rhythmic rocking again appeared strongly at 16 months. While these animals showed the stereotyped rocking behavior characteristic of primates reared apart from their mothers, they also demonstrated the emergence of active patterns of retreat and of aggressive behavior when faced with a frightening object. The change from immobilization to retreat, as well as the development of aggressive reactions, can apparently occur in the absence of the mother, although the evidence above (Green, 1965; Mason &

Green, 1962) indicates that immobilization remains a dominant tendency in mother-deprived monkeys. Green (1965) also noted an age change toward increased aggression in older animals: observing the behavior of 1½- and 5-year-old wild-born monkeys when confronted with novelty, Green found that increasing the complexity of the novel objects produced a decrease in "threat barking" in the younger animals, but led to intensified aggression in the older monkeys. Coping with novelty by a show of aggression appears to develop more slowly than retreat reactions to frightening objects.

Dogs

A series of papers reported the unusual behaviors of a group of Scottish terriers which were raised in pairs in limited environments following separation from the mothers at about 1 month of age—the age when fear reactions first appear in dogs. When introduced into more diversified environments at 8 months of age, they "froze," hugging the floor with forelegs apart and eyes staring forward; inoculations given when dogs were in this state produced none of the usual escape reactions (Clarke, Heron, Fetherstonhaugh, Forgays, and Hebb, 1951). Further tests were given 3–5 weeks following release from the restricted environments (Melzack, 1954): confronted by novel objects in a strange room, the dogs showed diffuse excitement (jumping about, sometimes with a "whirling" motion) but made no attempt to stay away from the strange objects; normally reared control animals avoided the objects. Tested again after 10 months of exposure to the diverse laboratory environment, they showed some avoidance reactions, but diffuse excitement remained characteristic. Normally reared dogs of this latter age showed aggressive reactions to the novel objects, but no aggressive behavior appeared in the experimental animals.

Thompson, Melzack, and Scott (1956) described the "whirling" fits of these dogs in further detail; eight of the 11 animals showed this behavior, sometimes in response to a new situation and sometimes without apparent cause while in the home cages. After posing for a minute or two, growling and with head turned back, the animal would run in tight circles, yelping, barking, and biting at its tail for periods of up to 10 minutes. This behavior was never seen in normally reared littermates. If vestibular activation could be established as a common feature, this behavior might be seen as partly analogous to the rhythmic rocking of mother-separated primates and to the "whirling" sometimes observed in schizophrenic children.

Results similar to those reported above were obtained by Melzack and Scott (1957) in a set of experiments in which dogs were raised in limited environments following separation from their mothers when 1 month old; in contrast to the above experiments, however, these pups were caged separately rather than in pairs. The animals were released from isolation at 8 months and allowed 1 month in a diversified environment before testing. When chased by a remotely controlled toy car equipped to give an electric shock, the experimental animals either ran in awkward circles unrelated to the motion of the car or froze at the boundary fence and received repeated shocks; normally reared controls quickly learned to make efficient avoidance reactions. Most experimental animals were unable to learn to jump a 3-inch barrier to escape an electrified grid floor, either remaining frozen or "whirling." Improvement on both of these tests was minimal following 2 years of further exposure to a diversified environment. At the earlier (9-months) testing, painful stimuli (pricking with a pin, holding a flame to the nose) produced reflexive jerks but no attempts to retreat from either the pain-inducing objects or the persons holding them.

Implicit in the analysis of the two sets of experiments considered above was the conclusion that the presence of a companion dog in the first set of experi-

ments was not effective in attenuating the effects of separation from mother and confinement in monotonous conditions. This was confirmed in a study by Fuller and Clark (1966b): when released from restricted environments into an open arena, the behaviors of mother-separated dogs raised in pairs were found to be no different from the reactions of other dogs raised alone, even though the companion dogs were present in the test situation. Since the paired dogs played together vigorously during their confinement in the rearing cages, the abnormal reactions to novelty reported in these dog studies cannot be attributed to a failure to develop an efficient control of movement.

The behaviors reported in the above studies—that is, enduring fearfulness, excited "whirling," the tendency to freeze when confronted by novelty, failure to withdraw from a painful stimulus, and failure to develop normal aggressive reactions toward novel objects—might be due to a lack of early experience with environmental complexity, as some of the authors have suggested, but they might also be due to the separation from the mother dogs at an age when the fear of novelty is first appearing. Unfortunately, experimenters working with dogs seem not to have considered maternal separation at about 1 month as a potentially relevant factor: no experiments were found which could isolate the relative contributions of early separation from mother and early environmental restriction in producing the abnormal fear behaviors observed in deprived dogs.

That at least some of the effects of abnormal rearing are to some degree reversible is shown by an experiment by Fuller and Clark (1966a). Beagles were raised in isolation following separation from the mothers at 3 weeks of age. Members of one experimental group were tested over a 4-week period beginning when they were 16 weeks old: several times a week the pups were held and patted for 30 seconds, then placed beside the handler in an open arena. These animals cowered, remained immobile, or showed violent "tantrums"; they developed only a minimal attachment to the handler. Another group of dogs, treated in an identical manner but given a tranquilizer (chloropromazine) in their food 1 hour before each testing, showed less fear and developed attachments to the handler. The authors concluded that an excessive fear of novelty in the first experimental group interfered with the formation of attachments and that the tranquilizer effectively reduced this fear.

The development of fear in man and other animals

Summary of the Effects of Abnormal Rearing

Stereotyped rhythmic behavior is characteristic of mother-deprived primates. Such behavior appears before the age at which novelty provokes fear, remains a frequent activity when the animal is in a familiar environment, and, after the fear of novelty develops, appears with increased intensity in unfamiliar situations. It can be inferred that such activity reduces tensions arising from various sources, including the fear of novelty. Chimpanzees raised with a sibling in place of the mother and monkeys raised with inanimate "mother-surrogates" also develop such abnormal behaviors, indicating that mother animals possess important attributes not offered by these substitutes. (These conclusions can also be applied to dogs if it is assumed (*a*) that "whirling" is analogous to rhythmic rocking and (*b*) that early separation from mother was the significant variable in dog experiments.)

While the evidence is somewhat tentative, it seems probable that maternally deprived primates have an unusually intense fear of visual novelty and that such heightened fearfulness remains characteristic well beyond infancy. (Such enduring fearfulness was found also in mother-separated dogs; however, because of the design of the canine experiments, the effects cannot be unequivocally attributed to maternal deprivation.)

When primates are raised without the mother, rearing in restricted environments intensifies the fear of novelty; such heightened fearfulness is not easily atten-

uated by later experience with diversified environments. This is seen most clearly in an experiment with mother-separated monkeys; experiments on dogs, while giving some support to this position, are less conclusive because of the undetermined contribution of early separation from the mother. It has not been shown that early environmental restriction would have enduring effects on animals which were raised with their mothers.

Observations of monkeys and dogs[1] show that the response to novel objects develops from an initial tendency toward immobilization (with vocalization), to active retreat, and later to aggressive reactions. Since motor abilities develop in advance of this sequence, the maturation of motor capacities cannot account for this changing pattern of fear responses. This developmental pattern is retarded in animals raised in conditions producing excessive fearfulness.

Discussion

Where the evidence is available, patterns of aversive reactions as well as the variables which affect their development are found to be generally similar for humans, other primates, and dogs. The various theoretical interpretations which have been proposed to account for such general patterns are examined in detail elsewhere (Bronson, in press). The present discussion treats the data on a more descriptive level, organizing the material in terms of three hypothetical developmental stages. This approach, which is of particular relevance to issues in human development, must sacrifice claims to cross-species generality: only for primates are the data sufficient to identify such stages. Although observations on dogs support the argument at various points, it is uncertain whether the proposed pattern of primate development is appropriate to nonprimate species in all details.

Developmental stages are defined by the types of stimuli found to be capable of producing aversive reactions and by the changing role of the mother in relieving tensions. It will be argued that a normal development of aversive reactions at later ages depends on successful transitions through earlier developmental stages, and that the mother plays an essential, but changing, role in promoting such developments.

The first developmental stage coincides with the period when distress reactions are dominant—visual novelty is not yet a basis for fear. Relief from distress is dependent on direct maternal contact; in some instances mothering behavior is closely integrated with infant reflexes (i.e., rooting and sucking; in furry primates, clinging), while at other times, the mother's activity (i.e., holding, rocking) seems not to depend on infant responses for its effectiveness. Attachment to the mother begins within this stage.

Some time after development of the capacity for encoding visual patterns, the emerging fear of visual novelty introduces the second stage. At the beginning of this second stage, aversive reactions remain similar in form to the distress response observed in the previous stage: in humans, crying and muscle tensing dominate the reaction; monkeys, possessing more developed motor abilities, flee to the mother. Retreat from the threatening object, followed by aggressive responses, appear later in the second stage. Attachment to the mother has encompassed her visual characteristics by about the time the infant enters this stage: the mere visual presence of the mother is often effective in reducing tensions provoked by novelty. However, common observation shows that the severely frightened toddler may also seek comfort from maternal activities which had alleviated distress in the previous stage—that is, in maternal contact and being rocked.

A third and final stage can be identified, although comment will be brief since it is not well documented by the material under review. Increasingly throughout the juvenile period, the fear of novel situations is mastered without direct reference to the mother. This growing independence has been reported in various primate species: humans (Gesell & Ilg,

[1]Some of the evidence for dogs was presented in the section on development under normal rearing conditions.

1946), chimpanzees (Reynolds & Reynolds, 1965), and monkeys (Jay, 1965). How much this increasing ability to cope with novelty in the absence of the mother is a function of a general decrease in fear as the environment becomes more familiar, and how much it is due to the development of new techniques for mastery of threatening objects—for example, through the gradual emergence of aggressive reactions—is not clear. It is evident that for humans this final stage emerges gradually through the midchildhood years and that during this transitional period cognitive references to the mother may often serve as substitutes for her immediate presence—for example, the child's awareness that mother awaits at home remains a source of security to the child throughout the latency period.

The abnormal behaviors observed in primates raised without adequate mothers indicate that the development of normal fear reactions at later stages depends on successful transitions through the earlier periods. As infants, mother-deprived primates develop behaviors which appear to be substitutes for maternal care—for example, stereotyped sucking and rocking activities. Stereotyped rhythmic activities remain characteristic of maternally deprived primates at later stages of development, implying that a primitive condition akin to distress remains chronic at ages when normally reared individuals less frequently experience tensions which, for their relief, are dependent on infantile modes of mothering.

The earliest reactions to visual novelty are similar to distress reactions, suggesting that the transition to the second stage occurs when a new stimulus dimension—vision—becomes capable of provoking previously existing aversive mechanisms. Later within this stage, more complex aversive reactions develop: first, retreat; later, aggression. In normally reared animals, the more primitive forms of aversive response gradually disappear; maternally deprived primates, however, continue to give the abnormal forms of response which they developed in the initial developmental stage (i.e., stereotyped behaviors) and are slow to evolve the more mature aggressive type of reactions to novelty.

Maternally deprived primates seem to remain chronically afraid of visual novelty. In light of evidence that the maternal presence normally provides security to the young as they explore and master their visual environment, it is reasonable to suggest that such deprived animals remain unusually fearful because mothers were absent throughout the second developmental stage, a time when exploratory behavior is usually a major activity. Unfortunately, no primate studies directly test this hypothesis; in all experiments, the separations from mothers commenced at birth, so it cannot be clearly demonstrated that the resulting heightened fear of novelty was primarily due to maternal deprivation through this second developmental period. (Two of the canine studies [Melzack, 1954; Melzack & Scott, 1957] lend some tentative support to the hypothesis. Separated from their mothers at age 4 weeks [the beginning of the second developmental stage], the dogs remained chronically afraid of visual novelty. It must be recognized, however, that, because these animals were raised in limited environments, the results might also be explained in other terms.)

If the hypothesis is correct—if, in normal development, the mastery of the fear of visually complex environments is based on the security provided by the presence of the mother during the second stage of development—the unusual behaviors observed in primates deprived of adequate mothers from birth onward must be viewed as the cumulative effects of deprivations suffered through two developmental stages: stereotyped activities are a consequence of deprivation of maternal contact beginning in the first developmental stage, while the enduring fear of visual novelty stems from the absence of a security-giving mother as novelty is encountered during the second stage. The failure of such animals, as adults, to achieve an independent mastery of environmental complexity—the final developmental stage—indicates that such

mastery depends on successful transitions through earlier stages.

It seems reasonably certain that the development of normal patterns of fear behavior is dependent on the maternal presence and that the salient qualities of "mother" differ in the different developmental stages. Less clear is the contribution of general sensory stimulation to developments within the different stages. Studies conducted on rodents and dogs indicate that animals subjected to diverse types of excitatory stimulation during the first developmental stage are often less fearful when confronted by novel situations at later ages (Levine, 1962; see also, Fox & Stelzner, 1966; and references in Hinde, 1966). The types of stimulation which have produced such effects are those which might be expected to provoke distress reactions, that is, cooling, pain, and rough handling. While not demonstrated in primates, it remains possible that in these species also an easy mastery of frightening situations in later periods presupposes some minimal degree of excitatory stimulation during the initial stage of development.[2]

Evidence that development of normal patterns of fear behavior depends on exposure to a diversified environment during the second developmental stage is suggestive, but far from conclusive. It was noted earlier that the studies on dogs which have been cited as evidence for the enduring effects of rearing in monotonous environments could alternately be interpreted as studies of maternal deprivation. One primate study (Mason & Sponholz, 1963) showed that mother-separated monkeys were, as adults, less fearful if raised in relatively diversified environments, but it remains to be shown that environmental diversity is an important parameter for animals which are raised with their mothers. On theoretical grounds, one might expect that the opportunity to explore visually complex environments while still of an age when the mother provides security for such enterprises would produce a more confident animal, but there is no experimental evidence that will directly test this prediction.

A final comment concerns the role of fear in childhood pathology. From the evidence reviewed earlier, fear in normal human infants seems similar to that observed in other animals: it is a reaction to novelty found in the immediate perceptual environment, and it wanes quickly when the perceptual world returns to the familiar. In cases of infant pathology, however, clinical theory proposes another phenomenon: since changes in the immediate perceptual environment do not alleviate tensions, chronic emotional disturbance is frequently attributed to the existence of frightening fantasies. This explanation, based mainly on an extension into infancy of phenomena observed in older subjects, at times attributes remarkable intellectual powers to the immature neocortex (e.g., Klein, 1955). Studies of the behavior of chimpanzees and monkeys reared apart from their mothers raise possibilities of another explanation of chronic infant tension. These animals showed symptoms analogous to those frequently found in infant pathology—stereotyped rhythmic behavior, an excessive fear of visual novelty, and a general failure to develop normal social responses—yet it seems unlikely that these animals are capable of developing such fantasies as are often assumed to be the basis of infant pathology. The behavioral characteristics of such maternally deprived animals imply a heightened fear of visual novelty. Since even the degree of visual complexity inherent in a normally diversified environment seems to be a source of tension, the

[2]The thesis that the distress reaction of infancy is a precursor to the fear of novelty gains further support from evidence that the excitatory stimulation of animals during the initial stage of development can affect the intensity of fear reactions at later ages. A neurological explanation of such developmental continuity was suggested in a previous paper (Bronson, 1965): in mammals which are born relatively immature, behavior during the first weeks of life is mediated by primitive networks located at the level of the brainstem; as the more sophisticated neural systems of the forebrain mature to levels where they become functionally significant, more complex behaviors, including the fear of novelty, emerge. Since the activity of these more complex neural systems is modulated by the primitive networks which mediate behavior during the neonatal period, experiences which affect neural development during this earliest stage will influence the intensity of complex fear reactions at later ages.

chronic nature of the disturbance need not be attributed to frightening fantasies. Such excessive fearfulness is bound to affect developing cognitive structures; therefore, some cognitive distortions are bound to occur. However, if the studies of other species are granted relevance to humans, the frightening fantasies of disturbed children must be recognized as a consequence, not the initial cause, of the pathology. The mechanisms by which the presence of the mother normally aids the young toward a comfortable familiarity with environmental diversity remain an area of great uncertainty. If we better understood the details of such processes, it might appear that some human infants, although raised by the mother, are nevertheless partially deprived, either because of the particular pattern of mothering or because of the special constitutional characteristics of the infant (see Kessen & Mandler [1961] for consideration of the nature of maternal stimuli which might act to alleviate infant tensions, and Schopler [1965] for possible constitutional variations which might make normal patterns of mothering inappropriate for some infants). Whether the basis of the deprivation lies primarily in unusual characteristics of the infant or the mother, it is suggested that some forms of early human pathology have roots in disturbances beginning in the initial postnatal period and that such disturbances lead to a pervasive fear of visual complexity; this is an alternative to the assumption that infant pathology is initiated by frightening fantasies.

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IMITATION OF FILM-MEDIATED AGGRESSIVE MODELS

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Most of the research on the possible effects of film-mediated stimulation upon subsequent aggressive behavior has focused primarily on the drive reducing function of fantasy. While the experimental evidence for the **catharsis or drive reduction theory** is equivocal (Albert, 1957; Berkowitz, 1962; Emery, 1959; Feshbach, 1955, 1958; Kenny,

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1952; Lövaas, 1961; Siegel, 1956), the modeling influence of pictorial stimuli has received little research attention.

A recent incident (San Francisco Chronicle, 1961) in which a boy was seriously knifed during a re-enactment of a switchblade knife fight the boys had seen the previous evening on a televised rerun of the James Dean movie, *Rebel Without a Cause,* is a dramatic illustration of the possible imitative influence of film stimulation. Indeed, anecdotal data suggest that portrayal of aggression through pictorial media may be more influential in shaping the form aggression will take when a person is instigated on later occasions, than in altering the level of instigation to aggression.

In an earlier experiment (Bandura & Huston, 1961), it was shown that children readily imitated aggressive behavior exhibited by a model in the presence of the model. A succeeding investigation (Bandura, Ross, & Ross, 1961), demonstrated that children exposed to aggressive models generalized aggressive responses to a new setting in which the model was absent. The present study sought to determine the extent to which film-mediated aggressive models may serve as an important source of imitative behavior.

Aggressive models can be ordered on a reality-fictional stimulus dimension with real-life models located at the reality end of the continuum, nonhuman cartoon characters at the fictional end, and films portraying human models occupying an intermediate position. It was predicted, on the basis of saliency and similarity of cues, that the more remote the model was from reality, the weaker would be the tendency for subjects to imitate the behavior of the model.

Of the various interpretations of imitative learning, the **sensory feedback theory of imitation** recently proposed by Mowrer (1960) is elaborated in greatest detail. According to this theory, if certain responses have been repeatedly positively reinforced, **proprioceptive** stimuli associated with these responses acquire secondary reinforcing properties and thus the individual is predisposed to perform the behavior for the positive feedback. Similarly, if responses have been negatively reinforced, response correlated stimuli acquire the capacity to arouse anxiety which, in turn, inhibit the occurrence of the negatively valenced behavior. On the basis of these considerations, it was predicted subjects who manifest high aggression anxiety would perform significantly less imitative and nonimitative aggression than subjects who display little anxiety over aggression. Since aggression is generally considered female inappropriate behavior, and therefore likely to be negatively reinforced in girls (Sears, Maccoby, & Levin, 1957), it was also predicted that male subjects would be more imitative of aggression than females.

To the extent that observation of adults displaying aggression conveys a certain degree of permissiveness for aggressive behavior, it may be assumed that such exposure not only facilitates the learning of new aggressive responses but also weakens competing inhibitory responses in subjects and thereby increases the probability of occurrence of previously learned patterns of aggression. It was predicted, therefore, that subjects who observed aggressive models would display significantly more aggression when subsequently frustrated than subjects who were equally frustrated but who had no prior exposure to models exhibiting aggression.

Method

Subjects

The subjects were 48 boys and 48 girls enrolled in the Stanford University Nursery School. They ranged in age from 35 to 69 months, with a mean age of 52 months.

Two adults, a male and a female, served in the role of models both in the real-life and the human film-aggression condition, and one female experimenter conducted the study for all 96 children.

General Procedure

Subjects were divided into three experimental groups and one control group of 24 subjects each. One group of experimental subjects observed real-life aggressive models, a second group observed these same models portraying aggression on film, while a third group viewed a film depicting an aggressive cartoon character. The experimental groups were further subdivided into male and female subjects so that half the subjects in the two conditions involving human models were exposed to same-sex models, while the remaining subjects viewed models of the opposite sex.

Following the exposure experience, subjects were tested for the amount of imitative and nonimitative aggression in a different experimental setting in the absence of the models.

The control group subjects had no exposure to the aggressive models and were tested only in the generalization situation.

Subjects in the experimental and control groups were matched individually on the basis of ratings of their aggressive behavior in social interactions in the nursery school. The experimenter and a nursery school teacher rated the subjects on four five-point rating scales which measured the extent to which subjects displayed physical aggression, verbal aggression, aggression toward inanimate objects, and aggression inhibition. The latter scale, which dealt with the subjects' tendency to inhibit aggressive reactions in the face of high instigation, provided the measure of aggression anxiety. Seventy-one percent of the subjects were rated independently by both judges so as to permit an assessment of interrater agreement. The reliability of the composite aggression score, estimated by means of the Pearson product-moment correlation, was .80.

Data for subjects in the real-life aggression condition and in the control group were collected as part of a previous experiment (Bandura et al., 1961). Since the procedure is described in detail in the earlier report, only a brief description of it will be presented here.

Experimental Conditions

Subjects in the Real-Life Aggressive condition were brought individually by the experimenter to the experimental room and the model, who was in the hallway outside the room, was invited by the experimenter to come and join in the game. The subject was then escorted to one corner of the room and seated at a small table which contained potato prints, multicolor picture stickers, and colored paper. After demonstrating how the subject could design pictures with the materials provided, the experimenter escorted the model to the opposite corner of the room which contained a small table and chair, a tinker toy set, a mallet, and a 5-foot inflated Bobo doll. The experimenter explained that this was the model's play area and after the model was seated, the experimenter left the experimental room.

The model began the session by assembling the tinker toys but after approximately a minute had elapsed, the model turned to the Bobo doll and spent the remainder of the period aggressing toward it with highly novel responses which are unlikely to be performed by children independently of the observation of the model's behavior. Thus, in addition to punching the Bobo doll, the model exhibited the following distinctive aggressive acts which were to be scored as imitative responses:

The model sat on the Bobo doll and punched it repeatedly in the nose.

The model then raised the Bobo doll and pommeled it on the head with a mallet.

Following the mallet aggression, the model tossed the doll up in the air aggressively and kicked it about the room. This sequence of physically aggressive acts was repeated approximately three times, interspersed with verbally aggressive responses such as, "Sock him in the

nose . . . ," "Hit him down . . . ," "Throw him in the air . . . ," "Kick him . . . ," and "Pow."

Subjects in the Human Film-Aggression condition were brought by the experimenter to the semi-darkened experimental room, introduced to the picture materials, and informed that while the subjects worked on potato prints, a movie would be shown on a screen, positioned approximately 6 feet from the subject's table. The movie projector was located in a distant corner of the room and was screened from the subject's view by large wooden panels.

The color movie and a tape recording of the sound track was begun by a male projectionist as soon as the experimenter left the experimental room and was shown for a duration of 10 minutes. The models in the film presentations were the same adult males and females who participated in the Real-Life condition of the experiment. Similarly, the aggressive behavior they portrayed in the film was identical with their real-life performances.

For subjects in the Cartoon Film-Aggression condition, after seating the subject at the table with the picture construction material, the experimenter walked over to a television console approximately 3 feet in front of the subject's table, remarked, "I guess I'll turn on the color TV," and ostensibly tuned in a cartoon program. The experimenter then left the experimental room. The cartoon was shown on a glass lens screen in the television set by means of a rear projection arrangement screened from the subject's view by large panels.

The sequence of aggressive acts in the cartoon was performed by the female model costumed as a black cat similar to the many cartoon cats. In order to heighten the level of irreality of the cartoon, the floor area was covered with artificial grass and the walls forming the backdrop were adorned with brightly colored trees, birds, and butterflies creating a fantasyland setting. The cartoon began with a close-up of a stage on which the curtains were slowly drawn revealing a picture of a cartoon cat along with the title, *Herman the Cat.* The remainder of the film showed the cat pommeling the Bobo doll on the head with a mallet, sitting on the doll and punching it in the nose, tossing the doll in the air, and kicking it about the room in a manner identical with the performance in the other experimental conditions except that the cat's movements were characteristically feline. To induce further a cartoon set, the program was introduced and concluded with appropriate cartoon music, and the cat's verbal aggression was repeated in a high-pitched, animated voice.

In both film conditions, at the conclusion of the movie the experimenter entered the room and then escorted the subject to the test room.

Aggression Instigation

In order to differentiate clearly the exposure and test situations subjects were tested for the amount of imitative learning in a different experimental room which was set off from the main nursery school building.

The degree to which a child has learned aggressive patterns of behavior through imitation becomes most evident when the child is instigated to aggression on later occasions. Thus, for example, the effects of viewing the movie, *Rebel Without a Cause,* were not evident until the boys were instigated to aggression the following day, at which time they reenacted the televised switchblade knife fight in considerable detail. For this reason, the children in the experiment, both those in the control group, and those who were exposed to the aggressive models, were mildly frustrated before they were brought to the test room.

Following the exposure experience, the experimenter brought the subject to an anteroom which contained a varied array of highly attractive toys. The experimenter explained that the toys were for the subject to play with, but, as soon as the subject became sufficiently involved with the play material, the experimenter remarked that these were her very best

toys, that she did not let just anyone play with them, and that she had decided to reserve these toys for some other children. However, the subject could play with any of the toys in the next room. The experimenter and the subject then entered the adjoining experimental room.

It was necessary for the experimenter to remain in the room during the experimental session; otherwise, a number of the children would either refuse to remain alone or would leave before the termination of the session. In order to minimize any influence her presence might have on the subject's behavior, the experimenter remained as inconspicuous as possible by busying herself with paper work at a desk in the far corner of the room and avoiding any interaction with the child.

Test for Delayed Imitation

The experimental room contained a variety of toys, some of which could be used in imitative or nonimitative aggression, and others which tended to elicit predominantly nonaggressive forms of behavior. The aggressive toys included a 3-foot Bobo doll, a mallet and peg board, two dart guns, and a tether ball with a face painted on it which hung from the ceiling. The nonaggressive toys, on the other hand, included a tea set, crayons and coloring paper, a ball, two dolls, three bears, cars and trucks, and plastic farm animals.

In order to eliminate any variation in behavior due to mere placement of the toys in the room, the play material was arranged in a fixed order for each of the sessions.

The subject spent 20 minutes in the experimental room during which time his behavior was rated in terms of predetermined response categories by judges who observed the session through a one-way mirror in an adjoining observation room. The 20-minute session was divided in 5-second intervals by means of an electric interval timer, thus yielding a total number of 240 response units for each subject.

The male model scored the experimental sessions for all subjects. In order to provide an estimate of interjudge agreement, the performances of 40 percent of the subjects were scored independently by a second observer. The responses scored involved highly specific concrete classes of behavior, and yielded high interscorer reliabilities, the product-moment coefficients being in the .90s.

Response Measures

The following response measures were obtained:

Imitative aggression. This category included acts of striking the Bobo doll with the mallet, sitting on the doll and punching it in the nose, kicking the doll, tossing it in the air, and the verbally aggressive responses, "Sock him," "Hit him down," "Kick him," "Throw him in the air," and "Pow."

Partially imitative responses. A number of subjects imitated the essential components of the model's behavior but did not perform the complete act, or they directed the imitative aggressive response to some object other than the Bobo doll. Two responses of this type were scored and were interpreted as partially imitative behavior:

Mallet aggression. The subject strikes objects other than the Bobo doll aggressively with the mallet.

Sits on Bobo doll. The subject lays the Bobo doll on its side and sits on it, but does not aggress toward it.

Nonimitative aggression. This category included acts of punching, slapping, or pushing the doll, physically aggressive acts directed toward objects other than the Bobo doll, and any hostile remarks except for those in the verbal imitation category; for example, "Shoot the Bobo," "Cut him," "Stupid ball," "Knock over people," "Horses fighting, biting."

Aggressive gun play. The subject shoots darts or aims the guns and fires imaginary shots at objects in the room.

Ratings were also made of the number of behavior units in which subjects played nonaggressively or sat quietly and

did not play with any of the material at all.

Results

The mean imitative and nonimitative aggression scores for subjects in the various experimental and control groups are presented in Table 1.

Since the distributions of scores departed from normality and the assumption of homogeneity of variance could not be made for most of the measures, the Freidman two-way analysis of variance by ranks was employed for testing the significance of the obtained differences.

Total Aggression

The mean total aggression scores for subjects in the real-life, human film, cartoon film, and the control groups are 83, 92, 99, and 54, respectively. The results of the **analysis of variance** performed on these scores reveal that the main effect of treatment conditions is significant ($\chi_r^2 = 9.06$, $p < .05$), confirming the prediction that exposure of subjects to aggressive models increases the probability that subjects will respond aggressively when instigated on later occasions. Further analyses of pairs of scores by means of the Wilcoxon matched-pairs signed-ranks test show that subjects who viewed the real-life models and the film-mediated models do not differ from each other in total aggressiveness but all three experimental groups expressed significantly more aggressive behavior than the control subjects (Table 2).

Imitative Aggressive Responses

The Freidman analysis reveals that exposure of subjects to aggressive models is also a highly effective method for shaping subjects' aggressive responses ($\chi_r^2 = 23.88$, $p < .001$). Comparisons of treatment conditions by the Wilcoxon test reveal that subjects who observed the real-life models and the film-mediated models, relative to subjects in the control group, performed considerably more imitative physical and verbal aggression (Table 2).

Illustrations of the extent to which some of the subjects became virtually "carbon copies" of their models in aggressive behavior are presented in Figure 1. The top frame shows the female model performing the four novel aggressive responses; the lower frames depict a male and a female subject reproducing the behavior of the female model they had observed earlier on film.

The prediction that imitation is positively related to the reality cues of the model was only partially supported.

TABLE 1. *Mean Aggression Scores for Subgroups of Experimental and Control Subjects*

RESPONSE CATEGORY	EXPERIMENTAL GROUPS					CONTROL GROUP
	REAL-LIFE AGGRESSIVE		HUMAN FILM-AGGRESSIVE		CARTOON FILM-AGGRESSIVE	
	F MODEL	M MODEL	F MODEL	M MODEL		
Total aggression						
Girls	65.8	57.3	87.0	79.5	80.9	36.4
Boys	76.8	131.8	114.5	85.0	117.2	72.2
Imitative aggression						
Girls	19.2	9.2	10.0	8.0	7.8	1.8
Boys	18.4	38.4	34.3	13.3	16.2	3.9
Mallet aggression						
Girls	17.2	18.7	49.2	19.5	36.8	13.1
Boys	15.5	28.8	20.5	16.3	12.5	13.5
Sits on Bobo doll[a]						
Girls	10.4	5.6	10.3	4.5	15.3	3.3
Boys	1.3	0.7	7.7	0.0	5.6	0.6
Nonimitative aggression						
Girls	27.6	24.9	24.0	34.3	27.5	17.8
Boys	35.5	48.6	46.8	31.8	71.8	40.4
Aggressive gun play						
Girls	1.8	4.5	3.8	17.6	8.8	3.7
Boys	7.3	15.9	12.8	23.7	16.6	14.3

[a] This response category was not included in the total aggression score.

While subjects who observed the real-life aggressive models exhibited significantly more imitative aggression than subjects who viewed the cartoon model, no significant differences were found between the live and film, and the film and cartoon conditions, nor did the three experimental groups differ significantly in total aggression or in the performances of partially imitative behavior (Table 2). Indeed, the available data suggest that, of the three experimental conditions, exposure to humans on film portraying aggression was the most influential in eliciting and shaping aggressive behavior. Subjects in this condition, in relation to the control subjects, exhibited more total aggression, more imitative aggression, more partially imitative behavior, such as sitting on the Bobo doll and mallet aggression, and they engaged in significantly more aggressive gun play. In addition, they performed significantly more aggressive gun play than did subjects who were exposed to the real-life aggressive models (Table 2).

Influence of Sex of Model and Sex of Child

In order to determine the influence of sex of model and sex of child on the expression of imitative and nonimitative aggression, the data from the experimental groups were combined and the significance of the differences between groups was assessed by t tests for uncorrelated means. In statistical comparisons involving relatively skewed distributions of scores the Mann-Whitney U test was employed.

Sex of subjects had a highly significant effect on both the learning and the performance of aggression. Boys, in relation to girls, exhibited significantly more total aggression ($t = 2.69$, $p < .01$), more imitative aggression ($t = 2.82$, $p < .005$), more aggressive gun play ($z = 3.38$, $p < .001$), and more nonimitative aggressive behavior ($t = 2.98$, $p < .005$). Girls, on the other hand, were more inclined than boys to sit on the Bobo doll but refrained from punching it ($z = 3.47$, $p < .001$).

Imitation of film-mediated aggressive models

The analyses also disclosed some influences of the sex of the model. Subjects exposed to the male model, as compared to the female model, expressed significantly more aggressive gun play ($z = 2.83$, $p < .005$). The most marked differences in aggressive gun play ($U = 9.5$, $p < .001$), however, were found between girls exposed to the female model ($M = 2.9$) and males who observed the male model ($M = 19.8$). Although the overall model difference in partially imitative behavior, Sits on Bobo, was not significant, Sex $\times$ Model subgroup comparisons yielded some interesting results. Boys who observed the aggressive female model, for example, were more likely to sit on the Bobo doll without punching it than boys who viewed the male model ($U = 33$, $p < .05$). Girls reproduced the nonaggressive component of the male model's aggressive pattern of behavior (i.e., sat on the doll without punching it) with considerably higher frequency than did boys who observed the same model ($U = 21.5$, $p < .02$). The highest incidence of partially imitative responses was

TABLE 2. *Significance of the Differences between Experimental and Control Groups in the Expression of Aggression*

RESPONSE CATEGORY	χ_r^2	p	COMPARISON OF TREATMENT CONDITIONS[a]					
			LIVE VS. FILM p	LIVE VS. CARTOON p	FILM VS. CARTOON p	LIVE VS. CONTROL p	FILM VS. CONTROL p	CARTOON VS. CONTROL p
Total aggression	9.06	<.05	*ns*	*ns*	*ns*	<.01	<.01	<.005
Imitative aggression	23.88	<.001	*ns*	<.05	*ns*	<.001	<.001	<.005
Partial imitation								
Mallet aggression	7.36	.10>p>.05						
Sits on Bobo doll	8.05	<.05	*ns*	*ns*	*ns*	*ns*	<.05	<.005
Nonimitative aggression	7.28	.10>p>.05						
Aggressive gun play	8.06	<.05	<.01[b]	*ns*	*ns*	*ns*	<.05	*ns*

[a] The probability values are based on the Wilcoxon test.
[b] This probability value is based on a two-tailed test of significance.

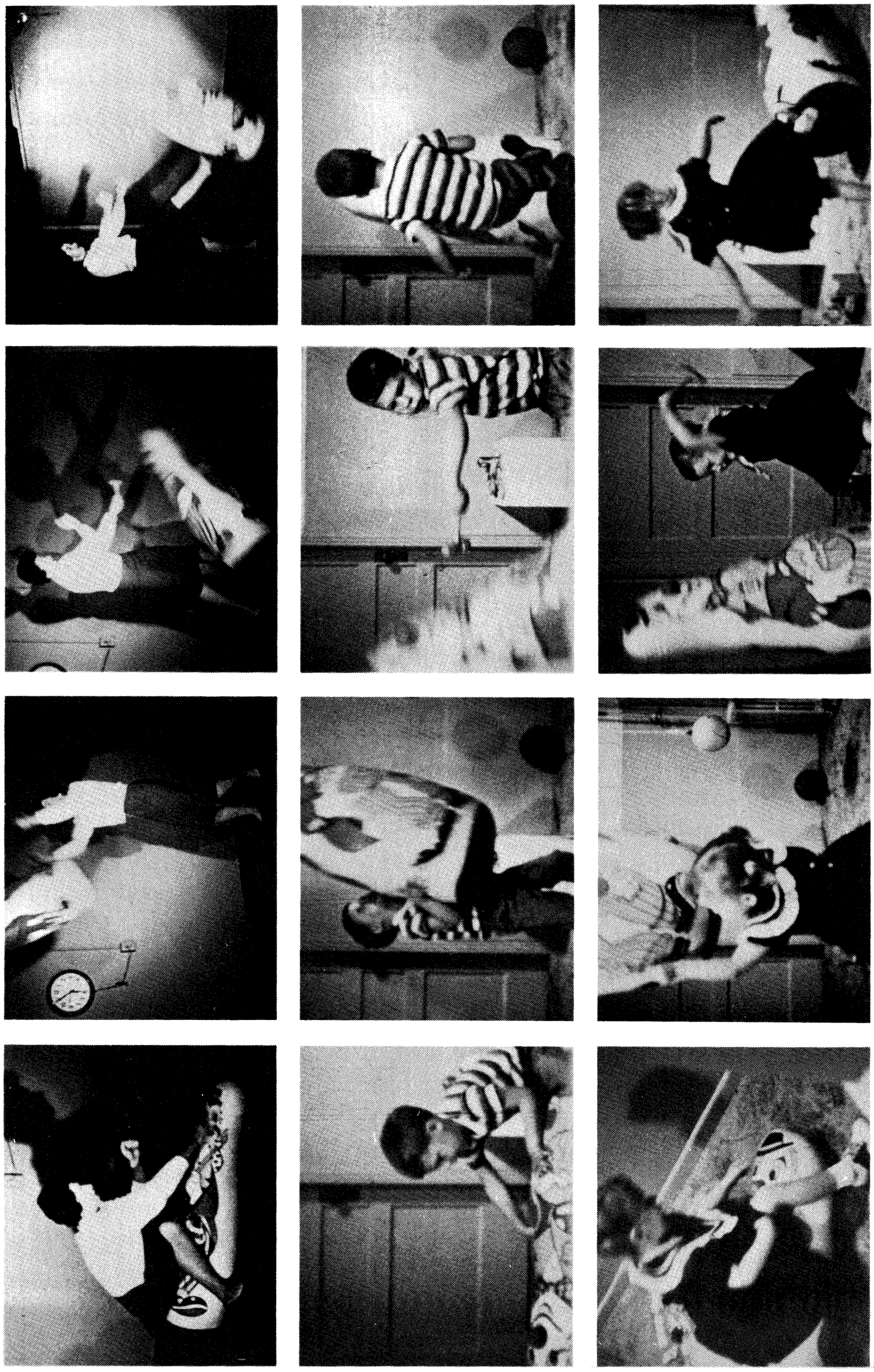

 Fig. 1. Photographs from the film, *Social Learning of Aggression through Imitation of Aggressive Models.*

yielded by the group of girls who viewed the aggressive female model ($M = 10.4$), and the lowest values by the boys who were exposed to the male model ($M = 0.3$). This difference was significant beyond the .05 significance level. These findings, along with the sex of child and sex of model differences reported in the preceding sections, provide further support for the view that the influence of models in promoting social learning is determined, in part, by the sex appropriateness of the model's behavior (Bandura et al., 1961).

Aggressive Predisposition and Imitation

Since the **correlations** between ratings of aggression and the measures of imitative and total aggressive behavior, calculated separately for boys and girls in each of the experimental conditions, did not differ significantly, the data were combined. The correlational analyses performed on these pooled data failed to yield any significant relationships between ratings of aggression anxiety, frequency of aggressive behavior, and the experimental aggression measures. In fact, the array means suggested nonlinear regressions although the departures from linearity were not of sufficient magnitude to be statistically significant.

Discussion

The results of the present study provide strong evidence that exposure to filmed aggression heightens aggressive reactions in children. Subjects who viewed the aggressive human and cartoon models on film exhibited nearly twice as much aggression than did subjects in the control group who were not exposed to the aggressive film content.

In the experimental design typically employed for testing the possible cathartic function of vicarious aggression, subjects are first frustrated, then provided with an opportunity to view an aggressive film following which their overt or fantasy aggression is measured. While this procedure yields some information on the immediate influence of film-mediated aggression, the full effects of such exposure may not be revealed until subjects are instigated to aggression on a later occasion. Thus, the present study, and one recently reported by Lövaas (1961), both utilizing a design in which subjects first observed filmed aggression and then were frustrated, clearly reveal that observation of models portraying aggression on film substantially increases rather than decreases the probability of aggressive reactions to subsequent frustrations.

Filmed aggression, not only facilitated the expression of aggression, but also effectively shaped the form of the subjects' aggressive behavior. The finding that children modeled their behavior to some extent after the film characters suggests that pictorial mass media, particularly television, may serve as an important source of social behavior. In fact, a possible generalization of responses originally learned in the television situation to the experimental film may account for the significantly greater amount of aggressive gun play displayed by subjects in the film condition as compared to subjects in the real-life and control groups. It is unfortunate that the qualitative features of the gun behavior were not scored since subjects in the film condition, unlike those in the other two groups, developed interesting elaborations in gun play (for example, stalking the imaginary opponent, quick drawing, and rapid firing), characteristic of the Western gun fighter.

The view that the social learning of aggression through exposure to aggressive film content is confined to deviant children (Schramm, Lyle, & Parker, 1961), finds little support in our data. The children who participated in the experiment are by no means a deviant sample, nevertheless, 88% of the subjects in the Real-Life and in the Human Film condition, and 79% of the subjects in the Cartoon Film condition, exhibited varying degrees of imitative aggression. In assessing the possible influence of televised stimulation on viewers' behavior, however, it is important to distinguish between learning and overt performance. Although the results of the present experiment demonstrate that the vast majority of children

learn patterns of social behavior through pictorial stimulation, nevertheless, informal observation suggests that children do not, as a rule, *perform* indiscriminately the behavior of televised characters, even those they regard as highly attractive models. The replies of parents whose children participated in the present study to an open-end questionnaire item concerning their handling of imitative behavior suggest that this may be in part a function of negative reinforcement, as most parents were quick to discourage their children's overt imitation of television characters by prohibiting certain programs or by labeling the imitative behavior in a disapproving manner. From our knowledge of the effects of punishment on behavior, the responses in question would be expected to retain their original strength and could reappear on later occasions in the presence of appropriate eliciting stimuli, particularly if instigation is high, the instruments for aggression are available, and the threat of noxious consequences is reduced.

The absence of any relationships between ratings of the children's predisposition to aggression and their aggressive behavior in the experimental setting may simply reflect the inadequacy of the predictor measures. It may be pointed out, however, that the reliability of the ratings was relatively high. While this does not assure validity of the measures, it does at least indicate there was consistency in the raters' estimates of the children's aggressive tendencies.

A second, and perhaps more probable, explanation is that proprioceptive feedback alone is not sufficient to account for response inhibition or facilitation. For example, the proprioceptive cues arising from hitting responses directed toward parents and toward peers may differ little, if any; nevertheless, tendencies to aggress toward parents are apt to be strongly inhibited while peer aggression may be readily expressed (Bandura, 1960; Bandura & Walters, 1959). In most social interaction sequences, proprioceptive cues make up only a small part of the total stimulus complex and, therefore, it is necessary to take into consideration additional stimulus components, for the most part external, which probably serve as important discriminative cues for the expression of aggression. Consequently, prediction of the occurrence or inhibition of specific classes of responses would be expected to depend upon the presence of a certain pattern of proprioceptive or introceptive stimulation together with relevant discriminative external stimuli.

According to this line of reasoning, failure to obtain the expected positive relationships between the measures of aggression may be due primarily to the fact that permissiveness for aggression, conveyed by situational cues in the form of aggressive film content and play material, was sufficient to override the influence of internal stimuli generated by the commission of aggressive responses. If, in fact, the behavior of young children, as compared to that of adults, is less likely to be under internal stimulus control, one might expect environmental cues to play a relatively important role in eliciting or inhibiting aggressive behavior.

A question may be raised as to whether the aggressive acts studied in the present experiment constitute "genuine" aggressive responses. Aggression is typically defined as behavior, the goal or intent of which is injury to a person, or destruction of an object (Bandura & Walters, 1959; Dollard, Doob, Miller, Mowrer, & Sears, 1939; Sears, Maccoby, & Levin, 1957). Since intentionality is not a property of behavior but primarily an inference concerning antecedent events, the categorization of an act as "aggressive" involves a consideration of both stimulus and mediating or terminal response events.

According to a social learning theory of aggression recently proposed by Bandura and Walters (in press), most of the responses utilized to hurt or to injure others (for example, striking, kicking, and other responses of high magnitude), are probably learned for prosocial purposes under nonfrustration conditions. Since **frustration** generally elicits responses of high magnitude, the latter classes of re-

sponses, once acquired, may be called out in social interactions for the purpose of injuring others. On the basis of this theory it would be predicted that the aggressive responses acquired imitatively, while not necessarily mediating aggressive goals in the experimental situation, would be utilized to serve such purposes in other social settings with higher frequency by children in the experimental conditions than by children in the control group.

The present study involved primarily vicarious or empathic learning (Mowrer, 1960) in that subjects acquired a relatively complex repertoire of aggressive responses by the mere sight of a model's behavior. It has been generally assumed that the necessary conditions for the occurrence of such learning is that the model perform certain responses followed by positive reinforcement to the model (Hill, 1960; Mowrer, 1960). According to this theory, to the extent that the observer experiences the model's reinforcement vicariously, the observer will be prone to reproduce the model's behavior. While there is some evidence from experiments involving both human (Lewis & Duncan, 1958; McBrearty, Marston, & Kanfer, 1961; Sechrest, 1961) and animal subjects (Darby & Riopelle, 1959; Warden, Fjeld, & Koch, 1940), that vicarious reinforcement may in fact increase the probability of the behavior in question, it is apparent from the results of the experiment reported in this paper that a good deal of human imitative learning can occur without any reinforcers delivered either to the model or to the observer. In order to test systematically the influence of vicarious reinforcement on imitation, however, a study is planned in which the degree of imitative learning will be compared in situations in which the model's behavior is paired with reinforcement with those in which the model's responses go unrewarded.

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DISTURBANCES EXPERIENCED BY CHILDREN IN THEIR NATURAL HABITATS

CLIFFORD L. FAWL

This is a study of incidents experienced as disturbing by children in their natural habitats. We have aimed to discover how common, how intense, and how long these disturbing incidents are. Since some disturbances obviously are socially evoked, we have attempted to evaluate the role of other people as causal factors in the disturbance of children, distinguishing between adult and child associates, and in some analyses, between mothers and fathers. In addition we have hoped to gain at least a rudimentary notion of the various psychological determinants of disturbance.

The background for the present investigation was a study of the frustrations occurring in the natural habitat of children. "Goal blockage" was employed as the working definition of **frustration**. The results of the study were surprising in two respects. First, even with a liberal interpretation of blockage, fewer blocked goals were detected than we expected (mean, 16.5 per child for an entire waking day). Second, frustration defined as goal blockage usually failed to produce an apparent state of disturbance on the part of the child. Meaningful relationships could not be found between blockage, analyzed in several respects, and consequent behaviors such as aggression, regression, sublimation, disturbance and other theoretically relevant behavioral manifestations. The data indicated, moreover, that many incidents that were experientially disturbing had been omitted by the goal-blockage approach. Therefore, since blockage evidently was neither a sufficient nor necessary condition for producing a state of disturbance, we decided to restructure our orientation to focus upon experientially disturbing incidents *per se*.

The Concept of Disturbance

In keeping with the reorientation of the research, disturbance was conceptualized as

an unpleasant disruption
in the *ongoing feeling tone of immediate awareness,*
evoked by, and *in reference to,*
a *discernible event or situation.*

Following is an incident taken from one of the records employed in this investigation which illustrates disturbance as here defined:

Abridged from "Disturbances Experienced by Children in Their Natural Habitats," pp. 99–126, in *The Stream of Behavior,* ed. Roger G. Barker. Copyright © 1963 by Meredith Publishing Company. Reprinted by permission of Appleton-Century-Crofts.

As Roy was standing in line at the drinking fountain, Geoffrey came up from behind him, and with considerable vigor swatted Roy on the back with the palm of his hand.

Roy turned around, faced his assailant. He looked somewhat hurt and angry. Certainly Roy had done nothing to Geoffrey.

As soon as Geoffrey saw Roy's expression, he dashed into the toilet room.

Roy gave immediate chase.

Our concept of disturbance, although independently arrived at, has points in common with an earlier formulation by Angyal regarding emotions in general (1941, pp. 71–72): "We consider the feeling tone of emotions as the *experience of the state and of the situation of the person under the aspect of value.*"

Both conceptualizations make explicit the notion of feeling tone, i.e., both are addressed to the experiential aspect of emotion. This facet of emotion has been investigated surprisingly little by present day psychologists. Lindsley points out in his review of emotions in the *Handbook of Experimental Psychology* (1951, p. 473) that, ". . . such basic data as there are on emotion have come largely through the study of its expressive aspects [e.g., facial expressions in photographs] and objectively recorded bodily activities [e.g., gastrointestinal motility]."

Angyal's and our own conceptions are similar, too, in emphasizing a referent; Angyal writes of the "experience of the state *and of the situation* . . . ," and our own definition includes, "evoked by, and *in reference to, an occurrence. . . .*" This means not only that there is a stimulus which evokes the experience but that the referent is an integral part of the experience.

The main sources of data for this study were the twelve day-long specimen records of Midwest children, the four records of children with marked physical disabilities, and the record of Wally O. at home. Wally O., who resided in a large metropolitan community, was the only child for whom there was prior clinical evidence of maladjustment (p. 170).

Disturbances experienced by children in their natural habitats

In this report a detailed analysis is presented of disturbances experienced by the Midwest subjects, who represent a fairly homogeneous group in ways other than age, and a brief survey is made of the analyses in which non-Midwest subjects differed significantly from the Midwest subjects.

Instructions for identifying disturbances were designed to present in molar, atheoretical terms the type of descriptive evidence which raters were to consider as indicative and as not indicative of disturbance. We emphasized in these instructions that disturbance was to be regarded as a *behaviorally inferred* construct of experiencing. Criteria were provided for distinguishing more than one incident of disturbance, and for treating borderline cases. . . .

Following the development of the instructions for identifying disturbances, but prior to the final marking of disturbances on the records, an agreement check was performed between an independent analyst and the author. This analyst was requested to identify, without opportunity for practice, the units of disturbance in a sample of 150 pages from the records of four children, which amounted to slightly over five hours of behavior. Since the independent analyst was unfamiliar with the study, the instructions and 10 sample disturbance units served as his sole criteria for identifying disturbances. The author identified independently the units of disturbance in the same material.

There was good agreement as to the total number of disturbances identified: 48 by the independent analyst and 44 by the author. This is an important finding since most of the analyses of this report are based on the total number of disturbances for each child. Good agreement as to totals does not indicate, however, that the analysts included the same incidents. Theoretically, analysts could agree perfectly as to totals yet include completely different incidents as disturbance

units. Our results show that 32 incidents were identified as disturbance units by both analysts, 16 disturbances were identified by the independent analyst and not by the author, and 12 were identified by the author and not by the independent analyst.

Where a given incident was included by one analyst but not the other, it usually was judged to be mild by the analyst who did include it, or it was unitized as one large unit of disturbance by one analyst and broken into two separate units by the other. In the latter case, then, this did not actually represent disagreement regarding the existence of a disturbance but, rather, disagreement as to whether the incident should be differentiated into more than one disturbance unit. Of the 16 disturbances marked by the independent analyst but not by the author, four (25 percent) were incidents that had been differentiated into more than one unit by the independent analyst and rated as one undifferentiated unit by the author, and 10 (62.5 percent) were judged to be no stronger than mild by the independent analyst. Thus, only two (16.5 percent) were really major disagreements. Of the 12 incidents identified as separate units of disturbance by the author but not by the independent analyst, 2 (16.7 percent) had been identified as a single disturbance by the analyst, 9 (75 percent) were judged to be no stronger than mild by the analyst, and 1 was a major difference in judgment. Of the total number of 28 disagreements, then, 3 (10.7 percent) were incidents judged to be disturbances of moderate or strong intensity by one of the analysts, yet were not identified as disturbances by the other analyst.

From the foregoing analysis we concluded that agreement between independent analysts left much to be desired, but that there was evidence that our criteria for demarking units of disturbance were not private; another person even without the benefit of training or discussion could identify disturbance units much as the author intended. The next step was to identify the disturbance units in the 17 behavior records under investigation. Thirteen of the records were unitized by the author, the other 4 (Raymond, Maud, Bobby, Claire) were done under the supervision of the author by an associate who was fully familiar with the study and the disturbance criteria.

To assess the consistency with which the final markings were done, an agreement check between the associate analyst and the author was performed on a total of 290 pages taken from ten behavior records representing nine and a half hours of behavior. This check was made after the task of identifying the disturbances was completed. Eight of the records had been analyzed solely by the author and two by the associate. Here again excellent agreement was found in the total number of disturbances: 104 by the associate analyst and 100 by the author. Eighty-three incidents were identified as disturbance units by both analysts independently. Of the 21 disturbance units marked by the associate but not by the author, 15 (71.4 percent) were judged to be mild in intensity by the associate and 5 (23.8 percent) were due to disagreement regarding the number of units within disturbance incidents. Of the 17 disturbance units marked by the author but not the associate analyst, 11 (64.7 percent) were judged to be mild by the author and 5 others (29.5 percent) involved disagreement as to number of units in incidents. Only 2 of the total 38 disagreements (5.3 percent) involved clear-cut disturbances. Our conclusion is that the disturbance units were marked with a satisfactory degree of consistency. . . .

Imposition is another key term we have employed which requires comment. By imposition we have reference to something that is thrust upon the child or which confronts the child not by choice of the child. This something can be an act of another person or simply physical conditions not produced by the child. Baldwin (1955, p. 142) defines impositions as those events which are "the results of the actions of someone else or of natural processes." Functionally, we have used

the term when the child has attributed the cause of his disturbance to foreign factors.

Seven causal types of disturbance were identified in the records. These were: Interference, Failure, Imposed Driving Force, Choice Conflict, Offending Imposition, Own Act, and Psychological Loss. The types are presented below in the form employed in the analysis of each of the 1,251 disturbances of the 17 subjects.

Interference: Either (a) an imposed force operates in a direction diametrically opposed to the one in which the subject is striving; or (b) an imposed incident or situation, not necessarily operating as a force, serves to impede, or hinder, the subject's ongoing goal-directed behavior. Neither the absolute magnitude of the interference, its magnitude relative to the subject's own force, nor its duration enter into the determination of this type. . . .

Examples: (a) Margaret wanted to enter the house, but the door was locked. (b) Verne had to wait until the girls had left the bathroom before he could enter. (c) Dutton wanted to continue playing with his sister, but she wanted to stop. (d) A conversation taking place in the classroom interfered with Roy's recitation.

Failure: Failure to attain or maintain to the subject's satisfaction a goal accepted by the subject is attributed by him to his own inadequacies. The failure need not be complete or permanent. . . .

Examples: (a) Wally O. wanted to climb a certain tree, but he failed to reach the first branch even though his little brother had been successful. (b) Douglas shot an arrow which fell short of the mark. (c) Claire had great difficulty getting the correct answer to an arithmetic problem.

Imposed Driving Force: A force is applied to move the subject *toward* a specific region (activity) by someone or something other than the subject himself. Whether or not the subject yields to the force is of no consequence. Also, it is of no consequence for the identification of this disturbance type whether the disturbance is in reaction to the application of the force, or to the anticipated negative valence of the region toward which the child is being forced.[1] . . .

Examples: (a) Maud was told to pick up her toys. (b) Douglas was assigned a lesson that was very boring to him. (c) Mary E. was having a good time playing outside and did not want to stop when her mother called her to supper.

Choice Conflict: Mutually exclusive forces acting on the subject present a situation in which a movement in any direction has negative consequences, either directly by leading the subject toward an activity of negative valence, or indirectly by leading the subject away from an activity of positive valence. . . . In each of the above cases, "x" and "y" are assumed to have different directions in the Lewinian sense of direction.

Example: (a) Douglas was momentarily confused when he started in the direction of the boy's rest room and remembered that the observer was a woman. (b) Mary C. became disorganized when she could not decide what to play.

Offending Imposition: This refers to actions or conditions or situations impinging upon the subject, or upon a personal belonging, which are not determined by the subject, and which are disturbing in their own right rather than as a result of the effect that they might have on the subject's ongoing goal-directed behavior. The marking of this causal type is not dependent on the hostile intention of the offender, or on the subject being the intended target of the offending action (see example "d" below). . . .

Examples: (a) Roy was annoyed by a slap on the back he received while standing in line at the drinking fountain. (b) Wally W. was chagrined by his

[1]When an imposed force *toward* a specific region also operated as a restraining force opposing the subject's own force, the Imposed Driving Force rating took precedence (see example "c"). In one sense, if we assume continuous purposivism, *all* Imposed Driving Forces are Interferences, that is, every Imposed Driving Force interferes with something already going on, yet we consider it to be important to distinguish between those incidents where the foreign agent is perceived as driving subject *toward* or *away* from a region.

cousin's criticism of a remark Wally made. (c) Lewis was both disgusted and embarrassed by the presence of cow dung in the adjoining field. (d) Raymond was disturbed by the way another boy treated a dog.

Own Act: The subject performs an act which he himself negatively evaluates; or the subject attributes the cause of his disturbance to an impact with the environment brought about as a consequence of his own, not necessarily intended, act. The impact is disturbing in its own right rather than as it relates to the subject's ongoing goal-directed behavior. If there is evidence that the subject places the blame on the environment, then the incident is judged as Offending Imposition rather than Own Act. . . .

Examples: (a) Margaret regretted that she had been hostile toward her little brother. (b) Lewis rolled off the davenport and hurt himself slightly. (c) Jimmy accidentally stuck himself with a pin.

Psychological Loss: Something valued by the subject no longer exists, or if it still exists there has been a sharp drop in its value. Emphasis is on the lost or damaged object itself rather than on who or what might be responsible. . . .

Examples: (a) Lewis entered the room to find that his toy gun had fallen apart. (b) Roy had hoped to listen to his favorite radio program, but it was already over when he arrived home. (c) Maud was quite anxious when she thought that her mother was going to leave the house. . . .

Discussion

It was the purpose of this research to explore the emotional disturbances of children in their natural habitats. In Table 1 we have attempted to summarize some important findings for the Midwest sample of children. Many analyses revealed differences between subjects on the basis of age; we have, therefore, juxtaposed the findings for the preschool and the school-age children.

The most characteristic disturbance of Midwest preschool children was mild in intensity, lasting only a few seconds; it resulted from an Interference by the mother. For the school-age children, the most characteristic disturbance was an Offending Imposition imposed by a child associate; it was mild in intensity and of less than a minute in duration. Although the sample of disabled children was very small, we consider it significant that they fell within the Midwest range in almost every major analysis. The age of the child has turned out to be more relevant to the occurrence of disturbance than his physical capability.

It is of some significance, we think, that a substantial number of disturbances was not connected in any way with ongoing, goal-directed behavior. Offending Imposition was the most prominent of these. All subjects considered, it was the second most common causal type, and for school-age children, it was the most common type. In identifying this particular type, we have done nothing more than indicate that certain events or situations can be intrinsically disturbing. We have not spelled out the perceptual conditions under which the event or situation is found disturbing. However, our findings indicate that the occurrence of nongoal-related disturbances is sufficiently common to justify intensive investigation of their conditions. Since so many of this type of disturbance involve other people, Heider's analysis of common-sense interpersonal perception appears to be useful (Heider, 1958, p. 17). Undoubtedly the perception of intentionality, for example, is important. If someone steps on your foot, your reaction, and especially the likelihood that you will be disturbed, is influenced by whether you perceive that he intended to do so. Informal study of this problem has revealed that intentionality is but one variable among many, however, and that it is neither a sufficient nor necessary condition for a disturbance reaction. Common-sense variables seem to us to be a profitable aid to further inquiry.

Adult associates evoked more disturbances than child associates. Adults in

TABLE 1. *Characteristics of the Disturbances Experienced by the Children of Midwest*

CHARACTERISTIC	AGE LEVEL: YOUNGER PRESCHOOL	AGE LEVEL: OLDER SCHOOL-AGE
Frequency	Over 90 per day per child	About 45 per day per child
Intensity	Mostly mild	Mostly mild
Duration	Brief; less than one minute	Mostly brief; but some longer disturbances
Source	Mostly social a. Evoked by adults (usually mother): over 50 percent b. Evoked by children: 20 percent c. Other evokers: 25–30 percent	Mostly social a. Evoked by adults: 33 percent b. Evoked by children: over 33 percent c. Other evokers: 30 percent
Common causal types (each accounting for more than one in six of all disturbances; in order of occurrence)	a. Interference (usually by mothers) b. Offending Imposition (unrelated to child's goal, usually social) c. Imposed Driving Force (always social, usually mother)	a. Offending Imposition (unrelated to child's goal, 50 percent by other children) b. Interference (usually by adults) c. Imposed Driving Force (always social, usually by adults) d. Failure

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our society, especially mothers, are the responsible environmental agents for directing the behavior of children, and this is a consuming job, especially in the case of preschool children. It is our impression that this role accounts for both the high frequency of interactions with children and the high number of adult-evoked disturbances. However, child associates evoked more disturbances per interaction (EFU). This may mean that child associates provided a more antagonistic social environment than adult associates. We use the word "antagonistic" rather than "hostile," since child-evoked disturbances were not more intense than adult-evoked disturbances. A truly more hostile environment would be the source of more intense disturbances as well as more frequent disturbances per interaction.

By virtue of her much greater contact with the child, the mother was in the position of accounting for more of the child's disturbances than was the father. However, the father, when in interaction with the child, was almost as likely as the mother to evoke a disturbance, and he evoked the same types of disturbances. But there was this difference: when the father was responsible for a disturbance, it tended to be more intense: in fact, in 14 of the 15 cases analyzed. Why this should be is not clear. It did not seem to matter, so far as the evocation of disturbances was concerned, whether the parent was of the same or the opposite sex as the child. All in all, differences between mothers and fathers as they related to the child were not as great as we had anticipated.

That a relationship between age and emotional behavior exists seems fairly certain on the basis of several other observational studies of children as well as this one. Goodenough (1931) and Ricketts (1934) each report that the frequency of anger incidents decreases with age; Blatz et al. (1937) and Inselberg (1958) report a drop with age in the occurrence of "emotional episodes." These findings raise an interesting theoretical question, namely, does the relationship between age and frequency of disturbance represent a developmental change in the psychological characteristics of the child, or does it reflect a change in the role of the environment as the child matures, or both?

Probably all theories of child development allow for changes occurring within the child *and* for changes in the role of the environment impinging upon the child as he grows older. In 1962 it is a truism to state that the child is a component in a social system; and that changes in the child affect changes in the child's social environment, and vice versa. So, when we oppose person-centered and environment-centered explanations of the age-disturbance relationship, we do not imply that one can argue one position to the exclusion of the other. Rather, we wish to point to differences in the emphases of the person-centered and environment-centered orientations. The positions considered represent divergent ones that *can*

be taken; they are not necessarily positions that *have* been taken by theoreticians.

From the person-centered point of view, the child becomes less vulnerable to disturbing experiences as he grows older, he becomes less sensitive to, or more tolerant of, negative incidents. Changes occur within the child in a personality sense as well as physically and intellectually. These changes can be thought of as changes in the dynamic structure of the child's personality.

Lewin's (1935) theory of the inner-personal development of the child can be used to illustrate the person-centered orientation, keeping in mind that Lewin also recognized the importance of social factors for psychological understanding. Following Lewin, we can think of the person as a system of needs represented by topological regions. Briefly, development can be characterized in part as involving the following changes within this system: an increasing differentiation of needs (more regions), an increasingly definite demarkation between the self and nonself (a more rigid boundary for the system as a whole), and increasingly greater articulation among needs (boundaries separating regions less permeable, more rigid). . . .

One of the consequences of the process outlined is the distinction between central and peripheral needs or regions. Impinging stimuli can be thought of as having less access to the central regions of the older child due to the presence of intervening regions and to the lesser permeability of all boundaries. Assuming that an experience of disturbance is directly related to the involvement of the central needs (regions) of the person, it follows that the older child is better buttressed against disturbing stimuli. Not only would disturbances be expected to be less frequent for the older child (as was found), but also less intense (as was detected to only a slight degree). An additional expectation would be that the disturbances of the older child would be longer in duration (as was found), since the greater impermeability of boundaries would make it more difficult for tension to dissipate.

An interesting feature of the disturbance data is the distinction among causal types. Arguing from a person-centered position, it is not clear to us why some types would be age-related (Interference and Imposed Driving Force) and others (Offending Imposition and Failure) would not be.

The fact that so many of the disturbances were evoked by other people urges us to consider the merits of an environment-centered orientation. Here we think in terms of the social psychology of disturbance. It is assumed that the child undergoes change with age from this point of view also. As he matures physically, he requires less guidance from other people. As a creature capable of learning, he comes to realize what is encouraged and what is discouraged by his culture. In short, he becomes socialized. We do not need to assume, following this orientation, that the dynamic structure of the child's personality undergoes change. Rather, the decrease in frequency of disturbance can be seen as a function of the older child being more in tune with his environment: he is disturbed less often because he has fewer conflicts with the environment. Especially appropriate from this point of view is the finding that Interference and Imposed Driving Force disturbances decrease sharply with age, since each implies conflict with the culture. Again, however, not all findings are so clearly in line with the environment-centered contention. The longer duration of disturbance in the case of the older child is not as easily explained here as by the person-centered theory, for instance.

Speculation regarding the relative merits of the two orientations is profitable only up to a point. The data necessary for further consideration of the issue are not available. We need a better basis upon which to calculate the role actually played by the environment in life situations. We need to know, for example, how often children *do* encounter interference by

their environment. Knowing this, we would be much closer to answering the important question: Does the older child have fewer Interference disturbances than the younger child because he is *more tolerant of interference,* or because he is *interfered with less often* by his environment? If the older child truly is more tolerant of interference, then we should expect that the percentage of environmental interferences resulting in disturbance would be lower for him than the younger child. If, on the other hand, it is not a question of tolerance level but rather a case of less environmental interference for the older child, then the percentage of interferences resulting in disturbance should not be substantially different for the older and younger child: the one-third as many Interference disturbances which we observed for the school-age child would be based upon one-third as many interferences by the environment.

We have not succeeded in covering all facets of the problem we have outlined. Clearly, though, there seems to be a need for further ecological investigation. An important theoretical issue is at stake, namely, the conceptualization of child development itself. The relationship of ecology to theory has not always been stressed, but it nevertheless exists. Not only is the field situation a fruitful source for the origin of hypotheses, but, as exemplified in the theoretical question raised in the present study, it also is occasionally preferable to the laboratory as the vehicle for evaluating them.

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SUGGESTIONS FOR FURTHER READING

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6

MORAL AND RELIGIOUS DEVELOPMENT

Throughout the ages interest has been shown in children's moral development. In this century, interest has risen and fallen intermittently as more or less scientific research on the topic has appeared. From the turn of the century to the 1930s, children's morality evoked considerable interest, although the research seems crude when judged by today's standards. For about two decades, from the early 1930s until the early 1950s, interest in children's socialization overshadowed concern about their morals. However, since the mid-1950s interest in the topic has burgeoned. Perhaps the sharpening conflict between world ideologies has highlighted the value systems on which they are based. Also, the breathless speed with which the world is changing has left many people confused and concerned over what standards their children should follow.

Not surprisingly, many questions about children's moral development remain unanswered. Conclusions at this time would be premature, anyhow, in view of the still confused status of research. What is morality? And what constitutes desirable character? Various lists, arranged in hierarchical order, have been devised to indicate levels of moral development, from the lowest, amoral form, to the highest, ideal form. In general, the ultimate morality is portrayed as a rational one, representing what is best both for individual and group. But what morality is best? The question of values remains nebulous—perhaps necessarily so, in view of the abstract and constantly shifting nature of values themselves. Is the "moral child" simply stupid, traumatized by following the rules, or is he someone who challenges authority in the classic all-boy tradition—or some hybrid of the two?

Another issue is this: How general or specific should training in morals be? That is, can a child become generally moral, or must he be taught what is right or wrong for each situation? The Hartshorne-May studies (1928) concluded that there is no such thing as general morality—that training for each situation must be specific. However, after a review of available research, Burton (1963) reported a general factor as well as specific situational elements.

Another issue is this: How does age relate to moral behavior? **Piaget** perceived moral development as depending on maturation and involving successive stages. While replications of Piaget's studies have generally confirmed his thesis, a substantial number of investigators have questioned it. Part of the confusion arises from the fact that many purported replications of Piaget's studies are in fact quite different.

One replication of Piaget's research, reproduced in the selection that follows, was done by Dr. Leonore Boehm and Dr. Martin L. Nass, both Associate Professors

of Psychology in the Department of Education at Brooklyn College, New York. In general, their results supported Piaget's hypothesis. There was clear-cut evidence of age as a factor in moral development, but not of social class or sex. By contrast, most research has indicated sex to be an important factor in moral development, probably dependent more on the differential way the sexes are reared than upon biological differences. Where age is concerned, we should not lose sight of the fact that the arrangement of experience over the years, and not merely maturation, may be crucial in determining the sequence of moral development. Similar patterns in children's development may be as much a function of common experiences in a specific culture as of built-in maturational patterns within the nervous system.

Another unresolved question is this: What should be the role of the school in moral education? While theorists generally deem the direct approach—lessons on honesty, truth, and the like—to be ineffective, little has been done to assess the long-range effects of this or any other sort of morals teaching. While it is conceded that the school has a part to play in such development, there is no consensus as to how this role should be discharged.

Other questions concern the child's acquisition of his moral attitudes and beliefs, and the relative influence of parents, peers and society. Parents are conceded the dominant role as agents of society. Peers are accorded an important though lesser role, but the exact relationship between parents and peers in determining a specific child's morality is unclear. Much is made of identification with parents as a process in moral development. The mother is usually accorded the major role in this, but recent studies have shown that the father plays a more prominent part than is generally recognized. Another view is that parents simply install a child's character, much as a workman installs plumbing, through manipulating his environment.

Analysis of religion as a factor in children's moral development has been neglected. One reason may be that many researchers have hesitated to ask the sort of questions that would delineate the part religion plays in moral development. In fact, over the past 70 years there has emerged only a very slow, though steady, trickle of research on children's religious development. The total body of this research is still small, but important. Some studies are purely descriptive, involving observing and classifying children's religious behavior. Studies involve such topics as conversion experience and concepts of God, heaven, and hell. By and large, the studies relating to conceptions of heaven, hell, soul, and the like reveal conventional concepts with elaborations.

In a classic study by Harms (1944), children were asked to draw pictures of how God looked. The children ranged from ages 3 to 15 and were of all religious denominations. Harms concluded that children go through certain universal developmental stages. In the fairy tale stage (ages 3 to 6), children drew God as a king, a daddy of all children, or as someone living in a golden house above the clouds. In the realistic stage (ages 6 to 11), children accepted the concepts of institutional religion; for instance, they might represent God with symbols such as the crucifix or Jewish star.

David Elkind's articles are among the very few of recent origin that explore children's religious development. Dr. Elkind, who is Associate Professor of Psychology at the University of Rochester, New York, undertook several studies of children's concepts of religious identity or denomination. The article included here is one of a series of four, the last yet to be written, which in turn investigate the denominational concepts of Jewish, Protestant, and Catholic children, and all three combined. The article about Protestant children indicates the complexity surrounding the understanding of "Protestantism." Protestants, of course, embrace many groups, and the concept is a difficult one for children to attain. The student is also encouraged to read the articles relating to Jews and Catholics, as

indicated in the bibliography at the end of Elkind's article.

In all three studies, Elkind used a somewhat standardized version of Piaget's semiclinical interview. Each child was interviewed separately and asked six questions, which served as the take-off point for a discussion. The questions (with the relevant denomination term inserted) were these: (a) Is your family . . .? Are you . . .? (b) Are all boys in the world . . .? (c) Can a dog or cat be . . .? (d) How do you become a . . .? (e) How can you tell a person is . . .? (f) Can you be . . . and American at the same time? More than 700 children were interviewed, and Piaget's criteria for justifying a developmental stage classification were applied to the interview materials. The results met Piaget's criteria, and three fairly distinct stages were identified that held for Jewish, Protestant, and Catholic children. Of course, it must be kept in mind that children of all three denominations belonged to the same major culture. Therefore, simply the fact that children of all three faiths followed a similar pattern of development fails to prove that such a pattern is inevitable. The commonality of pattern might possibly have derived from common features in the major culture, or from maturational factors, or from varying ratios of both.

At the first stage (ages 5 to 7) the child had only a general, undifferentiated concept of his denomination as a proper name. While acknowledging being Jewish, Protestant, or Catholic, he confused these names with the terms for race and nationality. One child said a Jewish person was different from a Catholic because some people have black hair and some people have blond. Another child, aged 5 years, 9 months, said Jews and Catholics differed because they came from different countries. Some of the children at this stage said one could not be both an American and a Jew.

Children at the second stage (ages 7 to 9) had concretely differentiated conceptions of their denominations. Their view was concrete in that they used observable features and actions to define their own denominations, and they used these features to distinguish different denominations. For instance, one child said a Jew is a person who goes to Temple or Hebrew school. Another child, aged 7 years, 9 months, said you can't be a Protestant and a Catholic at the same time because you can't go to two churches. Children at this stage had learned that they could be both American and belong to a denomination.

Children at the third stage (ages 10 to 12) held abstract, differentiated conceptions of their denominations. They defined their faith in terms of nonobservable mental characteristics such as belief and understanding instead of observable activities. One child, aged 12, said a Catholic is one who believes in the truths of the Roman Catholic Church. He said dogs and cats could not be Catholics because they don't have brains or intellects.

A number of investigations have related religious instruction, Biblical knowledge, and religious conservatism or liberalism to character as it is manifested in conduct, with largely negative results. However, some research findings indicate that religious training may affect forms of thought. More correlational studies should be done relating religious convictions to personality measures and character.

Actually, many areas of both moral and religious development remain to be tapped by researchers. For instance, we should know more about children's religious experience. Also, there are no definitive studies dealing with the development of prayer, belief, and faith, and their meaning for children at different age levels. A question already being studied but not fully resolved is how various influences on children's moral development interrelate. Martin Hoffman's summary of major research suggests how this process occurs and discusses theoretical implications. Dr. Hoffman is editor of the *Merrill-Palmer Quarterly* and Associate Editor of the *Review of Child Development Research.*

Chapter six

SOCIAL CLASS DIFFERENCES IN CONSCIENCE DEVELOPMENT

LEONORE BOEHM AND MARTIN L. NASS

Piaget (13), using the "clinical method," investigated the development of moral judgment in children. On the basis of these investigations, he concluded that there were two types of morality in the child. The first stage, referred to as morality of "constraint," exists until the age of 7 or 8 years. During this period adults are viewed as omnipotent, and obedience is automatic without reasoning or judgment. Punishment is regarded as a necessary retribution of justice to restore the status quo and is given in proportion to the size of the misdeed, independent of motive.

The more mature type of **morality**, which begins at about the age of 10, is the stage of "morality of cooperation" or reciprocity, highlighted by cooperation and mutual respect. **Conscience** has become more autonomous and the child evaluates intentions, rather than deeds alone. Punishment no longer needs to be "fair" and retributive. Piaget relates the emergence of this stage to the child's increased ability to differentiate between subject and object, to a more rational conception of authority, and thus to his liberation from the thought and will of others.

From "Social Class Differences in Conscience Development," *Child Development,* Vol. 33 (1962), pp. 565–574. Reprinted by permission of the authors and The Society for Research in Child Development, Inc. This investigation was supported by research grant M-2585 from the National Institute of Mental Health, USPHS.

An intermediary stage in which the child internalizes rules without evaluating them was noted by Piaget in the 8- to 10-year-old group.

Piaget's work was extended by other investigators to include studies of variation in moral judgment as a function of (a) chronological age (5, 6, 9, 11, 12), which indicated that more mature moral responses occurred with increasing age; (b) intelligence (5, 6, 10), which resulted in contradictory findings; (c) social class and culture (1, 4, 7, 16) in which the general trend was toward social class differences in moral judgment, but not of a consistent nature; (d) sex (7, 11, 12), which found girls to be more advanced than boys in the area of moral judgment. The existence of the two types of morality as described by Piaget has been questioned by Kohlberg (8), MacRae (10), and Caruso (2).

Child Development

In general, previous findings report age to be the only consistently operative factor in the development toward maturity of moral judgment.

The present investigation was designed to attempt a more systematic study of the influence of social class on children's responses to stories involving moral judgments.

Method

The *S*s were 102 children aged 6 to 12 and in grades 1 through 6 of public elementary schools.[1] Fifty-four of the group were of the upper lower socioeconomic class (referred to as working class); 48 were of the upper middle class. Parent occupation was used as the standard of evaluation, the lower group being occupational classes 4 through 7 and the upper middle class comprising classes 1 through 3. All of the children were of average intelligence (IQ 90 to 110) as measured whenever possible by the Pintner-Cunningham Intelligence Test administered in the first grade. The children

[1]Comparative groups of parochial school children and gifted children have been studied by Boehm.

were of white American born parents and included only those who had older siblings since previous research has found a more strongly developed conscience in only children and oldest children (14). The groups contained an equal number of boys and girls. The children included in the study were without overt personality problems.

In addition to the above group the sampling was extended by Boehm to include a group of 58 intellectually gifted children in the public schools, 27 of working class background and 31 of upper middle class families. Since the responses of this group failed to show statistical differences from the original population, these data were combined with the average group.

TABLE 1. *Comparison of Groups with Regard to Matching Variables**

	NUMBER OF CASES			AGE (MONTHS)		IQ	
	TOTAL	BOYS	GIRLS	MEAN	SD	MEAN	SD
Working Class	81	32	49	106.8	20.1	111.7	17.7
Upper Middle Class	79	32	47	107.4	19.2	113.7	12.7

* With respect to the matching variables no significant differences appear between the groups.

Table 1 presents the composition of the groups. Thus, a total of 160 children were interviewed individually by the investigators using Piaget's "clinical method." Responses were recorded on tape and transcribed. The children were told that the study had nothing to do with their school work. Each of the four stories told was designed to test a central hypothesis. The stories presented are as follows:[2]

A. *Fight Story*. This story was employed to test the hypothesis that middle class children will concern themselves more with the underlying motive for a physically aggressive act than with the aggressive act itself, in contrast with working class children, who will still be primarily oriented to the amount of physical injury involved.

[2]Cup Story and Lost Story were taken from Piaget. Fight Story and Scout Story were constructed by Boehm with the assistance of Mlle. Alina Szeminska.

Two boys who were good friends got to school early one morning and had nothing to do. They decided to have a fun fight before school to see who was stronger. During the fight, Louis hit George's nose by accident and it began to bleed badly.

(The questions which follow are illustrative of the type used. In the course of his probing, the investigator may ask a large number of questions. The few here quoted are deemed sufficient to indicate the nature of the questions used.)

1. How do you think Louis felt about it?
2. Yes, Louis felt sorry (using the child's term) and wanted to do something to feel better. He thought that if he asked his teacher what to do, the teacher would tell him to write one hundred times, "I should not fight before school." He thought that some friends would tell him to give George one of his favorite toys, or buy him a gift or to go to George and say that he is sorry, it was an accident. Whose advice do you think he followed?
3. Why?
4. Louis went to George to apologize (using the child's term). George told him to forget about it. He said, "You could have been hurt just as easily. The fight was just in fun." When do you think Louis felt better, when George said it was all right, when he wrote the pages for the teacher, or when he gave his toy to George?

B. *Cup Story*. This story was employed to test the hypothesis that working class children will concern themselves more with material values involved in the story than they will with underlying motives, the upper middle class group being more concerned with motivation.

1. A little boy named John (or girl named Mary depending upon the sex

of the subject) is in his room. He is called to dinner. He goes into the dining room (kitchen) and opens the door. Behind the door is a chair with a tray with 15 cups on it. John had no way of knowing that it was there. He goes in, the door knocks against the tray, and all the 15 cups break.
How do you think the mother felt about it?
2. A little boy named Henry (girl named Margaret) is at home alone. Just before his mother left the house she told him not to take any cookies. As soon as she leaves, he takes a chair, climbs up on it to get to the cooky jar. The cooky jar is too high for him to reach and while he stretches his arm he knocks over one cup that breaks.
a. What do you think about the two boys?
b. Why?
c. Was one naughty, were both naughty (using child's term)?
d. Should they be punished?
e. Should one be punished more? Which one?

C. *Lost Story*. This story was employed to test the hypothesis that the groups will show no significant differences in their attitude toward lying.

1. A boy named Joe (girl named Alice) just moved into the neighborhood and didn't know the names of the streets very well. One day while he was playing, a man stopped him and asked where ——— Street was (street near child's school). Joe wasn't sure and answered, "I think it's there." It was not there. The man got lost and could not find the house he was looking for.
2. A boy named Mike (girl named Louise) knows the names of the streets very well. One day a man asked him where ——— Street was. Mike wanted to play a trick and said, "It's there," and showed him the wrong street. The man didn't get lost and was able to find his way again.
a. What do you think of these two boys?
b. Why?
c. Is one of them naughtier than the other?

D. *Scout Story*. This story was employed to test the hypothesis that the groups will show no significant difference in a situation involving a choice between peers and authority.

A group of children X years old (the subject's own age) want to give a surprise birthday party for their scout leader. One boy has accepted the responsibility of decorating the room. He wonders whom he could ask for advice.
1. Whom do you think he might ask?
2. He thought of asking his teacher who knows a lot about English, social studies and math, but she doesn't know anything about art. He also thought of asking a boy in his class who is a good artist, knows a lot about decorating and even won prizes for it. Whom do you think he decided to ask?
3. He asked both and they gave him two different ideas. Whose advice do you think he followed?
4. He thought both ideas were equally good. Which one do you think he followed?
5. A friend heard about it and thought that the child's idea was better.
6. If he follows the friend's advice, how will he feel toward the teacher when she finds out he didn't follow her advice?

In addition to the above major hypotheses, the study hypothesized that girls' responses would indicate earlier maturity of moral evaluations than would boys' and that the child's sense of morality is dependent upon the specific situation and does not represent a common level in all situations.

Each child's transcribed protocol was scored independently by four judges.[3] Identifying data were concealed. Responses were classified according to Piaget's three stages of morality (13):

1. "Morality of constraint." There is automatic obedience to rules without reasoning or judgment. Adults are viewed as omnipotent. Punishment is seen as a necessary retribution of justice and is given in proportion to the size or the results of the misdeed, independent of motive. Intentions are of no concern to the child.

[3]The judges were the two authors, Mrs. Doris Danto, and Mrs. Esther Malbin, former graduate students at Brooklyn College.

2. An intermediate stage in which the child internalizes rules without evaluating them or alternates in his responses to the situations.

3. "Morality of cooperation." This stage is highlighted by cooperation and mutual respect among peers. The child evaluates intentions rather than deeds or outcome alone. Moral behavior is engaged in for its own sake, not through fear of punishment.

Results

Agreement among the judges on categorization of responses was unanimous in most instances. Only those interviews were used where at least three judges agreed.[4] An example of one response follows:

Fight Story—(Female, aged 10–1, IQ 93, working class)
Q How do you think George felt about that?
A Well, I guess he felt sorry that he did it.
Q How do you think the other boy felt?
A He must have felt bad about it.
Q Whom do you think he asks, the teacher or the friend?
A I think the friend.
Q Why?
A Well, I don't think he would like to write five hundred times "I wouldn't like to fight."
Q What do you think would make George feel better?
A The toy.
Q What made him feel better, when George said it was all right, forget about it, or when he wrote down one hundred times "I shouldn't fight before school," or when he gives him the toy? Which makes him feel better?
A I think when he says he's sorry.
Q Why does that make him feel better?
A Well, he doesn't have to write five hundred times.
Scored "1" by all judges.

[4]It was possible after some discussion among the judges to include all interviews in the final tabulation.

In the statistical analysis of the data it was found necessary, because of the small number of responses in the "1" and "2" categories of conscience level, to combine them and test them against "3." The results were then analyzed using a chi-square technique.

The percentages of responses by scoring category and the chi-square values for the several comparisons are presented in Table 2. The age breakdown for purposes of statistical analyses was to compare the "below 9" with "9 and above" levels because of insufficient numbers in each age group. This roughly divides the group in half.

The results indicate that age is the only variable which meets the test of statistical significance in three of the four stories. No other variables hold up statistically.

Viewing this finding with reference to the major hypotheses, one sees that two of the four are supported while two are refuted. That is, the lack of class difference in Scout Story and Lost Story supports the predictions. The responses to Cup Story show a trend in the predicted direction in which the working class group is more concerned with the

TABLE 2. *Percentages of Responses in the Scoring Categories with Chi-Square Values**

BASIS OF COMPARISON	FIGHT STORY 1	2	3	CUP STORY 1	2	3	LOST STORY 1	2	3	SCOUT STORY 1	2	3
Working Class	38	10	52	28	34	38	12	20	68	11	25	64
Upper Middle Class	26	19	55	16	30	54	05	14	81	13	26	61
	$X^2 = .18$			$X^2 = 3.62$			$X^2 = 3.11$			$X^2 = .20$		
Boys	23	34	43	23	34	43	11	21	68	10	32	58
Girls	40	10	50	16	44	40	12	14	74	06	28	66
	$X^2 = .32$			$X^2 = .07$			$X^2 = .90$			$X^2 = 1.05$		
Below 9 Years	45	23	32	34	45	21	17	38	45	08	38	54
9 Years and Above	23	15	62	06	27	67	06	10	84	08	23	69
	$X^2 = 4.82$†			$X^2 = 35.27$‡			$X^2 = 13.13$†			$X^2 = 1.13$		

* All X^2 data are based on the combination of scoring categories "1" and "2" tested against "3."
† Significant at the .05 level.
‡ Significant at the .01 level.

actual material loss. In this case, however, the p value falls between the 10 and 5 percent levels. With respect to the Fight Story no trend is evident since the responses of the groups are virtually identical. Thus, the expected social class differences are not supported by the data.

The comparison of the sexes reveals no statistical differences or trends and fails to show, as in previous studies (7, 11, 12), that girls are generally more advanced in their development of conscience than are boys.

Regarding age, the operation of developmental factors appears to a highly significant degree. Children below 9 years of age give significantly more immature responses to three of the four stories than do children of 9 and above. More complete age data are given in Table 3. The story for which no difference is noted is the Scout Story in which a uniformly higher level of response is found for all groups. The latter factor would tend to support the findings of Boehm (1) who, using the same story, reports that American children are more advanced than their Swiss counterparts in the "peer-authority" situation and are emancipated from adult authority at an earlier age. This factor was recently commented upon by B. Inhelder in a personal communication. She indicates that Piaget's staff now finds that Swiss children develop more rapidly in this as well as other areas.

the studies may be an important factor.

The hypothesis that the child's response is specific to the situation was tested by computing a Friedman two-way analysis of variance by ranks (15). A χ_r^2 of 16.92 was obtained, with a corresponding p value of .001.

Chi-square tests dealing with possible sex differences within social class and class differences within sex were performed and failed to yield significant results. The one exception was in response to Cup Story, where the upper middle class boys showed a significantly greater concern with the motivation behind the material damage than did working class boys, who concerned themselves with the actual damage involved ($.05 > p > .02$). In Lost Story this same finding appears as a trend within boys ($.10 > p > .05$). No such differences appear in girls.

Discussion

One of the **hypotheses** offered and confirmed by this study was that the stage of a given individual or group level of conscience development varies with the specific situation involved: It may be seen in Table 2 that the percentage of "immature" responses is shown to vary considerably with story, ranging within the upper middle class, for example, from a low of 5 percent on Lost Story to a high of 26 percent on Fight Story. These findings further emphasize the need for specificity

TABLE 3. *Percentages of Children at Given Age Levels with Responses in the Three Scoring Categories*

AGE	FIGHT STORY			CUP STORY			LOST STORY			SCOUT STORY		
	1	2	3	1	2	3	1	2	3	1	2	3
6 Years	28	44	28	39	44	17	22	56	22	11	39	50
7 Years	47	24	29	29	53	18	13	31	56	6	44	50
8 Years	50	11	39	33	39	28	17	28	55	6	33	61
9 Years	12	35	53	0	29	71	6	12	82	0	16	84
10 Years	29	12	59	12	17	71	12	6	82	16	42	42
11 Years	27	0	73	6	40	54	0	13	87	6	13	71

The age of 9 years seems to be a crucial turning point toward greater maturity: the majority of 9-year-old American children considered subjective more than objective responsibility, whereas in Piaget's investigation (13) only half of his 9-year-old subjects gave mature answers. Again, the time difference between

with respect to the situation and the material involved when one deals with a discussion of children's moral evaluations. The differences in the same individual from story to story are at times much greater than group or class differences. Our results have not infrequently reflected the entire range of scoring cate-

gory for individual children on the several stories, further underscoring the specific nature of the responses.

The results do not indicate that an increase in maturity of conscience is related to a decrease in authority dependence. A number of children who responded least maturely in Fight and Scout Story gave more mature responses in the other two series, neither of which presented a choice between peer and authority.

Turning to the individual stories, the lack of social class differences with respect to attitudes toward aggression, as manifested in the responses to Fight Story, runs counter to our hypothesis, which was drawn from the work of Davis and Havighurst (3). The failure to confirm this hypothesis may be due to differences between our upper-lower class group and their lower-lower class group. Furthermore, our schools were not in slum areas but in mixed neighborhoods, so that our working class subjects were constantly exposed to middle class influences.

The greater differences which appear in response to Cup Story, although here too they fall short of statistical significance, reflect the working class group's stronger concern for material values. This concern may reflect a clear perception of the reality involved, for it is conceivable that a larger number of poor mothers than rich ones would in fact be more upset over the breakage of 15 cups than over one cup regardless of the reason, and "take it out" on the child. Nevertheless, according to Piaget's scheme, this approach does not reflect "moral relativity" but is an indication of immanent justice.

The failure of the responses to Lost and Scout Stories to differentiate between the two social class groups supports two of the study's original predictions, namely that the groups will show no significant differences with respect to their attitudes toward lying and toward ingratiation of authority or authority dependence. Both social class groups are willing to forgive "honest mistakes" regardless of the consequences but condemn a deliberate lie, even if it does no harm. Only a minor proportion of the group (12 percent working class, 5 percent upper middle class) felt otherwise. For the Scout Story these figures are 11 percent and 13 percent, respectively. Thus, our groups in these situations responded quite similarly, reflecting the common elements rather than the differences in American childrearing standards with respect to certain aspects of conscience. For example, the middle class concern for material damage in the Cup Story occurs more than twice as often as the working class concern about lying or ingratiation of authority.

Social class differences in conscience development

The failure of significant sex differences to appear, either within the total group or within classes, runs counter to previous work in this area. Previous investigations in the area of conscience development (12, 13, 14, 16) have found that girls tend to develop more rapidly than do boys. Why our groups fail to show this statistical differentiation is difficult to comprehend since this has rather been a pattern in previous studies. Our qualitative data, however, show that girls of 9 and below tend to score higher than boys, while boys above this age score as high or higher than girls.

In the middle class, the trend toward significance appears in the Fight Story, where girls show a more advanced level than do boys, who are at approximately the level of both working class boys and girls. This trend is an interesting one to note since it points out the working class's greater emphasis on responding to the act of aggression and perhaps a difference of childrearing in the middle class, where boys are taught more to "fight back" and girls to avoid such situations. Thus, the lack of aggressive responses in girls of the middle class may be a direct reflection of sex role differences, where such inhibition of aggression is not appropriate to the boy's role. This point can also be made for sex difference trends on the other stories, three of which involve a situation

which can be broadly interpreted as containing elements of aggression.

In the Lost Story, a reversal of this trend appeared. Middle class boys and girls reflect similar patterns, while a trend toward sex differences is noted in the working class, where girls show a more advanced pattern than do boys. The pattern of working class girls is similar to that of the middle class, and hence the group most inclined to support the individual playing the trick is the working class boys' group. The culprit is the one who caused the man to get lost.

With respect to age differences, the study's only clear-cut area of results is evident. The progressive nature of more mature moral evaluations, one of the basic components for the development of conscience, and the existence of the levels described by Piaget are fully substantiated. The fact that one of our stories failed to discriminate the below 9 from the 9 and above age group suggests that for the story in question our subjects had already made the shift at an earlier age. The basic developmental trends are apparent.

Summary

A study was made of the effects of social class differences on conscience development. One hundred sixty children from working class and upper middle class backgrounds were interviewed, using Piaget's clinical method. Four stories were told each child, designed to measure his attitudes toward physical aggression, material values, lying, and ingratiation of authority and authority dependence. Responses were recorded and rated independently by four judges. It was found that:

1. None of the stories differentiated working class from middle class children at a statistically significant level, although a number of the predictions appeared as trends.

2. Although girls, when compared with boys, did not show the expected superiority of moral evaluations in the development of conscience according to statistical analysis, they showed a number of qualitative trends in this direction.

3. When divided into a "below 9-year-old" and a "9-year-old and above" group, significant developmental trends appeared.

4. It was found that "morality of cooperation" was not based on authority independence.

5. Tests of interaction were performed and nonsignificant trends were noted and discussed. The results were compared with those of Piaget and other investigators.

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THE CHILD'S CONCEPTION OF HIS RELIGIOUS DENOMINATION: III. THE PROTESTANT CHILD

DAVID ELKIND

Purpose

This is the third of four papers dealing with children's conceptions of their religious denomination. Results of the first study with Jewish children (2) and of the second study with Catholic children (3) made it possible to distinguish four aspects of a denominational conception. Two of these aspects—those having to do with the property common to all members of a denomination and with the compatibility of multiple group memberships—were found to develop in three age-related stages. The other two aspects of denominational knowledge—those having to do with the recognition and attainment of denominational membership—did not reveal definite stages with age. One purpose of the present study was to determine whether similar results would be found with Protestant children.

Before going further it should be said that the study of Protestant youngsters presented difficulties not encountered in the investigations of Jewish and Catholic children. One of these difficulties was that, in contrast to the relative homogeneity of the Jewish and Catholic faiths, the Protestant faith has nearly three hundred heterogeneous groupings. In view of this diversity it was necessary to choose from among the various Protestant churches one which would be as representative as possible of the whole denomination. The Congregational Church was chosen both because of its large membership and because of its position somewhere in the middle with respect to the orthodoxy of religious beliefs and practices. The claim is not made, however, that the results of the present study correctly represent the **conceptual** development of all Protestant children.

The multiplicity of Protestant groups not only created a problem of sampling for the investigator, but also posed a problem of conceptualization for the Protestant children themselves. The concepts "Jew" and "Catholic" are first-order concepts in the sense that they have no independently named subdivisions. The concept "Protestant," on the other hand, has many independently named subdivisions and is in that sense a second-order concept—a class which includes many smaller classes. Numerous studies (e.g., 1, 5) have shown that second-order concepts are usually attained between the ages of 6–7, whereas first-order concepts are attained much earlier. Because of the inherent difficulty in forming the Protestant conception, and because Protestant children often receive less-extended and less-systematic religious training, a larger

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age range of subjects (5–14) was employed in this than in previous studies.

Method

Subjects

Three hundred Protestant children attending Sunday School of After-School Religious Classes were tested.[1] The children came from communities in and around Boston and varied in socioeconomic level from lower to upper class, although the majority came from middle-class homes. . . .

Procedure

The 100 children who were attending Sunday-School classes were individually interviewed by the writer. The remaining 200 children were group-tested by teachers in their After-School Religious Classes. In each class, forms containing the test questions were distributed. The teachers read the questions aloud, and then requested the children to reread the questions silently and answer them in the space provided.

Interview Questions

Each child who participated in the study, whether seen individually or in a group, answered the following six questions:

1. Is your family Protestant? Are you a Protestant? Are all boys and girls in the world Protestant?
2. Can a dog or a cat be a Protestant?
3. How can you tell a person is a Protestant?
4. How do you become a Protestant?
5. What is a Protestant?
6. Can you be a Protestant and an American at the same time?

After giving their *yes* or *no* responses, children were asked to explain their answers. The explanations, rather than the *yes* and *no* answers, were the primary data of the study.

[1]The author is greatly indebted to Mrs. Gertrude Vialle (DRE) and the Sunday School teachers of the First Congregational Church of Newton, Mass., for their friendly cooperation. The author is also grateful to Rev. Walter Wyman for allowing him to test children attending Sunday School at Old South Church, Boston.

Scoring

According to Piaget (4) the presence of stages can be determined by the appearance of three characteristics: (*a*) the uniformity of response within one or several adjacent age groups; (*b*) the appearance of more differentiated and abstract conceptions with increasing age; (*c*) the presence of some ideas from the earlier stages in the generally more-advanced replies of older children (adherences) and the presence of ideas appropriate to the later stages mixed in with the generally primitive answers of the young children (anticipations). The explanations of the children in the present study were evaluated according to these criteria.

Results and Discussion

All of the characteristics indicative of conceptual stages were found in children's replies to questions regarding the property common to all Protestants and the compatibility of multiple class memberships. Replies to the other two questions, having to do with the attainment and recognition of Protestant membership, did not show definite changes with age. In the following sections, presentation of the results which showed a stage-wise development will be followed by the results which showed no clear-cut development.

Knowledge of the Property Common to All Protestants (Questions 2 and 5)

The two questions to be discussed in the present section were both designed to obtain children's knowledge of the property common to all Protestants, but did so in different ways. Question 5, which asked "What is a Protestant?" aimed at getting this information directly through children's definitions of "Protestant." On the other hand, Question 2, which asked "Can a dog or a cat be Protestant?" aimed at acquiring this information indirectly through children's notions of why pets could or could not be Protestant. The extent of agreement be-

tween the replies to the two questions served as an internal check of their reliability. In general the replies to both questions indicated a gradual development from vague, undifferentiated conceptions to abstract, clearly demarcated conceptions.

Stage 1. At this stage (usually age 5–6) children had only a vague conception of the meaning of Protestant.

> Mar (5–1) What is a Protestant? "I don't know." Really? "Well, maybe it's something that makes you feel happy." Can a dog or a cat be a Protestant? "Yes." Why? "They could fight among themselves. My boy friend (sic) is a Protestant and he fights."

In her reply Mar illustrated the primitive stage in the development of the Protestant conception. She had heard the term but had not connected it with any definite property. When forced to explain the term, she chose at random from several characteristics, first saying that it "makes you feel happy" and then saying, "He is a Protestant because he fights." This first stage was characterized by a dim familiarity with the term "Protestant" and a vague and confused awareness of what the term signified.

Stage 2. Children at the second stage (usually 7–10) had a differentiated but concrete conception of their denomination.

> Kay (8–11) What is a Protestant? "He belongs to a Protestant family." Can a dog or a cat be a Protestant? "Yes." How is that? "Sometimes they follow you to church and because it's your dog and cat."
> Pete (8–4) What is a Protestant? "He gets bap-a-tized." Can a dog or a cat be a Protestant? "Yes." Why? "Because everybody in our house is Christian."
> Jo (7–11) What is a Protestant? "They go to different churches." Can a dog or a cat be a Protestant? "No." Why not? "Because they don't like animals in church."

At this stage children conceived the property common to all Protestants as either (*a*) belonging to a Protestant church, or (*b*) belonging to a Protestant family. In both cases the common property was conceived concretely as a form of activity—either going to church or living in a particular house. This concrete, action-oriented conception of Protestantism was equally reflected in their responses to the question concerning the dogs and the cats. When Kay and Pete thought of the animal as part of their family, they assumed that he partook of its properties, namely, its religious denomination. On the other hand, when Jo thought of an animal going to church, she recalled never having seen a dog in church and assumed that pets were not allowed there and therefore could not be Protestant.

Stage 3. Third-stage children (usually ages 11–14) had a differentiated and abstract conception of their denomination.

> Faith (12–1) What is a Protestant? "A faithful believer in God and doesn't believe in the Pope." Can a dog or a cat be a Protestant? "No, they are God's animals, they cannot think or know God."
> Will (13–1) What is a Protestant? "A person who believes in God and Christ and is loving to other men." Can a dog or a cat be a Protestant? "No, they just take the attitude of the family they are living with. We have two cats who belong to a Protestant family but it doesn't mean they are Protestant."
> Laura (13–7) What is a Protestant? "A Protestant is a person who believes in Protestant things." Can a dog or a cat be a Protestant? "No, because they can't join a church or understand what God is."

As these replies indicate, children at the third stage conceived the property common to all Protestants as a system of beliefs which were both moral and religious. This new abstract conception was equally evident in their replies to the dog-and-cat question. Having attained a conception of the essential property of a denomination, understanding or belief, they also discovered the fundamental difference between animals and men, namely, intelligence. The appearance of such ideas as "belief" and "understanding" reflect a

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remarkable leap in the development of thought. The presence of such ideas indicates that these older children have begun to reflect on and to conceptualize their own mental processes. In this sense they have approached the level of thinking of the mature adult. The percent of children at each stage for each question and for each age level is given in Tables 2 and 3.

Knowledge of Class Membership Compatibility (Questions 1 and 6)

Both Questions 1 and 6 forced children to judge the compatibility of two dissimilar classes. Question 1, "Are all boys and girls in the world Protestant?" aimed at revealing children's awareness of the incompatibility of certain classes (all children and all Protestants). Question 6, on the other hand, was directed towards revealing children's awareness of the compatibility of certain classes (Americans and Protestants). The two questions thus complemented each other and served as mutual checks on the reliability of the response.

Stage 1. Children at the first stage, usually ages 5–6, had only a vague, confused conception of class-membership compatibility.

> Carl (5–0) Is your family Protestant? "No." What are they? "Actors." Are you a Protestant? "No, I'm an actor too." Are all boys and girls in the whole world actors? (Here *E* decided to go along with the child's term.) "Yes." Why? "They act nice." Can you be an American and a Protestant at the same time? "No." Why? "I don't know."
>
> Pat (5–6) Is your family Protestant? "Our name is Blackmur." Are you a Protestant? "No," (wistfully) "just plain Blackmur." Are all boys and girls in the world Protestant? "Yes." Can you be an American and a Protestant at the same time? "Only if you move."
>
> Lauren (6–5) Are you a Protestant? "Yes." Is your family Protestant? "Yes." Are all boys and girls in the world Protestant? "No, some are Italian." Can you be an American and a Protestant at the same time? "No." Why not? "You can't have two (names)."

These children were clearly unable to handle class inclusions and exclusions. They thought that compatible classes (American and Protestant) were incompatible and that incompatible classes (all children and all Protestants) were compatible. While part of their difficulty probably arose because of their confusion regarding the properties denoted by the conceptual terms used (as shown in the preceding section) their difficulty was probably also attributable to the logical problems involved in determining the compatibility of classes.

Stage 2. At the second stage (usually 7–10) youngsters had a differentiated but concrete conception of class compatibility.

> Len (7–11) Are you a Protestant? "Yes." And is your family Protestant? "Yes." Are all boys and girls in the world Protestant? "No." Why not? "Some are Catholic and Jewish." Can you be an American and a Protestant at the same time? "Yes, because an American can be a Protestant or a Catholic."
>
> Barb (9–8) Are you a Protestant? "Yes." Is your family Protestant? "Yes." Are all boys and girls in the whole world Protestant? "No." Why? "Because some of them are Catholic." Can you be both an American and a Protestant at the same time? "Yes, because you live in that world and go to that church."

These children were clearly able to make correct judgments about class inclusions and exclusions. They knew that not all boys and girls were Protestant and that they could be Protestant and American at the same time. These inclusions and exclusions, however, were explained on the concrete level of actions and observables. In justifying their answers they often referred to their own personal experiences rather than to the general properties of the classes with which they were dealing. Answers such as "You live in that world and go to that church" were concrete in the sense that they referred to particular experiences and not to the abstract qualities of the conceptions of religion and nationality. Thus correct

judgments of multiple class memberships based on concrete particular experiences characterized the responses of second-stage youngsters.

Stage 3. Third-stage children (usually 10–14) had an abstract and differentiated conception of class-membership compatibility.

> Dow (11–6) Are all boys and girls in the world Protestant? "No." Why not? "Because there are different faiths in the United States." Can you be an American and a Protestant at the same time? "Yes." Why? "Because there are different faiths in the United States."
> Bert (12–5) Are all boys and girls in the whole world Protestant? "No." Why not? "Not all people believe in the same things." Can you be an American and a Protestant at the same time? "Yes." How is that? "In America you have the right to be any religion you want to be."

As shown by the above examples, the ability to explain the compatibility of classes by means of their abstract, general properties rather than by reference to personal experiences characterized performances of third-stage children. This finding that children's thought became objective at the third stage complements the finding of the previous section which showed that at the third stage thought also became reflective. Reflection is the objectivization or externalization of one's own thought processes. . . .

Knowledge of How Protestant Membership Is Recognized (Question 3)

For the Protestant children (as for the Jewish and Catholic youngsters) there were no clear-cut age differences observable in their replies to the question, "How can you tell a person is Protestant?" The replies were not random, however, and fell easily within one of several, easily demarcated categories. These categories and exemplars of the responses placed in them are described below.

Concrete Religious Action. Replies in this category indicated that a Protestant could be recognized by some particular, observable action.

> Nor (9–2) How can you tell a person is Protestant? "The way they act." How do you mean? "You can tell by the church they go to."

Direct Communication. In this category fell all those replies which indicated that denomination could only be determined by verbal communication.

> Sue (9–6) How can you tell a person is Protestant? "You have to ask them."

Abstract Religious Action. Included in this category were all those replies which indicated that recognition of Protestant membership involved knowledge of the person's beliefs or general principles of behavior.

> Fred (14–2) How can you tell a person is Protestant? "Because they are free to repent and pray to God in their own way."
> Carol (12–6) How can you tell a person is a Protestant? "Because we believe different from any other religion."

No Way. Those children whose replies fell in this category indicated that there was no way to a person's denomination.

> Joe (8–6) How can you tell a person is a Protestant? "Ya can't."

Don't Know. Children who answered that they did not know how to tell that a person was a Protestant were distinguished from those who said there was no way to tell. While on the surface the "no way" and "don't know" answers were very similar, they were really at opposite extremes of denominational knowledge. The "no way" answer implied a sophisticated understanding of religious denomination; the "don't know" answer implied a naivete with regard to religious knowledge.

It should be said that some, always the youngest children, mentioned speech and skin color as signs indicative of Protestant denomination. The context of these replies indicated that these children were confusing racial and religious characteristics. . . .

Knowledge of How Protestant Membership Is Acquired (Question 4)

Answers to the question "How do you become a Protestant?" like those presented in the preceding section fell more easily into categories than into developmental stages. The categories and typical examples are given below.

Family. This category included all those replies which indicated that becoming Protestant had to do with belonging to a particular family.

> Mar (10–3) How do you become a Protestant? "My grandmother was and my mother and father, so I just became one."
> Liz (10–8) How do you become a Protestant? "I was born into a Protestant family."

Concrete Religious Action. Under this heading were placed all those replies which indicated that becoming a Protestant was determined by some specific, clearly discernible action.

> Beth (7–1) How do you become a Protestant? "By going to a Protestant church."
> Bev (8–1) How do you become a Protestant? "Well, I'm not sure. Maybe if you get baptized in a Protestant church."

Abstract Religious Action. Replies indicating that becoming a Protestant involved rule-regulated or nonperceptible behaviors were included in this category.

> Pat (9–9) How do you become a Protestant? "Well, you have to believe in a certain person or believe in a certain religion."
> Betsy (12–5) How do you become a Protestant? "Well, you are baptized first and worship in the Protestant way and follow the Protestant rules."
> Linda (10–2) How do you become a Protestant? "I learned about the religion from my parents and was baptized into the religion."

As can be seen from the above replies, some children gave answers which fell in more than one category. . . . There were a few answers which were obviously idiosyncratic and derived from the unique circumstances of a particular child's life. For example, one child said that it was possible to become Protestant by "marrying a Protestant woman." Such replies were few in number and were not tabulated in the results.

While there were no clear-cut stages shown, . . . some age trends were discernible. The frequency of concrete-religious-action responses at first increased and then decreased, while the percentage of abstract religious actions showed a relative increase with age. In sum, the results . . . reflect a development from a vague, idiosyncratic and phenomenalistic conception to one which approached the differentiated, objective and reflective conception of mature adult thought.

Reliability of the Stage Categorizations

It has been suggested to the writer that the denominational studies would be of enhanced significance if some measure of reliability of the stage categorizations were obtained. To make as fair a test as possible, a psychologically naive but highly competent English teacher, Miss Sally Malinsky, was given a description of the criteria for the stages for each of the four questions which showed a development sequence. She then went through the records and categorized all the 300 responses to each question into three stages. A comparison of her results with those of the writer showed an agreement of better than 90 percent for the 300 categorizations for each of the four questions. For those answers on which there was disagreement, discussion between the two raters easily resolved the difficulty. Accordingly, it can be assumed that the categorizations by stages had considerable reliability.

Homogeneity of the Stages

Until now, the presentaion of results has been concerned with group trends, and individual differences have been omitted from the tabulations. The concept of stages, however, presupposes that any given child is at about the same stage

with respect to all aspects of his conceptual knowledge. If this were not true it would be impossible to assume, as Piaget (6) does, that there is an underlying mental system which determines the whole of a child's conceptual performance at a given age.

To determine whether this assumption could be supported by the results of the present study, each child was given a homogeneity score. If all his answers (to the four questions which elicited responses categorizable by stages) were at the same stage, he was given an A score. If all his replies but one were at the same stage, he was given a B score. If two replies were at one stage and two at another, he was given a C score. Finally, if he gave replies at all three stages, he was given a D score. . . .

The degree of homogeneity of response for individual children was considerable. Only 1 percent of the children fell in the D category and only 16 percent fell in the C category. This amount of variation could easily be accounted for by anticipations and adherences of ideas from earlier and later stages.

. . . The relative homogeneity of replies varied somewhat with age. This was not unexpected. Older children had passed through more stages and the possibility of adherences from earlier stages was much greater among them than among the younger children. Also at the transitional stages, when children were discarding a concrete and undifferentiated conception for a more abstract and delineated one, there was likely to be more heterogeneity of replies. . . .

The results of the present investigation, like those of the previous studies in this series, are in general agreement with the developmental theory of Jean Piaget. According to Piaget, conceptions develop and the content and form of the child's verbalizations reflect the progress of this development at each age level. In the concluding paper Piaget's theory will be the starting point for a more detailed analysis of the developmental changes underlying the attainment of abstract denominational conceptions. The final paper will also contain a comparison of the similarities and differences in the performances of Jewish, Catholic, and Protestant children.

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Summary

Three hundred 6–14-year-old Protestant (Congregational) children answered questions regarding their religious denomination. Results showed that the conceptualization of the property common to all Protestants and of the compatibility of multiple-class memberships developed in three age-related stages. Conceptualization of means for recognition and attainment of Protestant membership showed less clear-cut age changes. Tests for the reliability of the stage categorizations, for the homogeneity of the stages, and for the relative difficulty of the questions were included in the study. A comparison of the results with those obtained from Jewish and Catholic children, together with a theoretical treatment of all the findings, will be presented in a concluding paper.

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Chapter six

CHILDREARING PRACTICES AND MORAL DEVELOPMENT: GENERALIZATIONS FROM EMPIRICAL RESEARCH

MARTIN L. HOFFMAN

In complex areas such as that of morality and its antecedents no single research can supply the answers to all important questions. Each study can do no more than shed light on a small facet of the problem, especially in the early stages of research when measuring instruments and experimental procedures are cumbersome and inefficient. Progress therefore requires many research efforts, along with systematic attempts to assess methods and integrate results. This paper is such an attempt. Its purpose is to pull together the research findings on parental practices and the child's moral development so as to point up tentative generalizations, gaps, and inconsistencies which can be used as guides in further research. The studies examined are those which were designed primarily to investigate parental antecedents of moral variables and which meet current methodological standards. The focus is substantive although methodological points are made where necessary in interpreting contradictory findings and suggesting directions for further research.

Theoretical Foundations of the Research

Most of our theoretical knowledge about moral development derives from the works of Piaget and Freud. Piaget and his followers have focused on the cognitive aspects of the child's moral orientation, and their empirical investigations have centered on the child's concepts of justice, his attitudes toward rules, and toward violations of moral norms (e.g., 17, 19, 28). In these studies the child's moral perspective has been probed with great depth, and a number of valuable concepts bearing on the cognitive aspects of morality have been contributed to the field, e.g., moral realism, immanent justice, and the role of cognitive processes in moral growth. Although considerable importance is assigned to decreased adult constraint and increased interaction with peers, the main interest of these investigators is to establish developmental sequences which are more or less universal, fixed, and intrinsic to the organism, rather than to study individual differences and the antecedent role of the parent. The one exception, a study of the effects of parental restriction on the child's moral judgment (23), produced inconclusive results.

Psychoanalytic theory, on the other hand, is concerned primarily with the emotional and motivational aspects of personality structure. And although this theory too was initially intended as a universal explanation of the processes underlying the formation of conscience rather than a source of hypotheses about individual differences, it has provided the main inspiration and the over-all direction for most of the research on the role of parental practices in shaping and determining moral character.

Although Freud did not organize the theory into a coherent whole, its concepts are unveiled in scattered references throughout the literature and it may be reconstructed briefly as follows: The young child is inevitably subjected to many frustrations, some of which are due to parental control and some of which have nothing directly to do with the parent, e.g., illness and other physical discomforts. All of these frustrations contribute to the development of hostility toward the parent. The child's anxiety over counter aggression by the parent or over the anticipated loss of the parent's love leads him to repress his hostility, incorporate the parent's prohibitions, and

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generally model his behavior after that of the parent. Among the important parental characteristics adopted by the child is the capacity to punish himself when he violates a prohibition or is tempted to do so —turning inward, in the course of doing this, the hostility which was originally directed toward the parent. This self-punishment is experienced as guilt feelings which are dreaded because of their intensity and their resemblance to the earlier fears of punishment or abandonment by the parent. The child, therefore, tries to avoid guilt by acting always in accordance with the incorporated parental prohibitions and erecting various mechanisms of defense against the conscious awareness of impulses to act contrary to the prohibitions.

This theory is thus far unchallenged as a comprehensive account of the role of family dynamics in the moral development of the child. Although many researchers in the field disagree with some of its details, most have accepted its basic premise: that sometime in early childhood the individual begins to model his behavior after that of the parent and through this process of identification codes of conduct such as moral standards and values, which are originally externally enforced, become part of the child's own set of standards.

Because of the complexity of the theory no investigator has attempted to test it in its entirety. Instead, each study has focused on one or another of its concepts—such as identification or guilt—often modifying it somewhat in line with other theoretical approaches, e.g., **reinforcement** learning theory.

Identification

The psychoanalytic concept that has received the most attention from theorists and researchers is **identification**. Two general types of identification are discussed in the literature. In one—referred to as identification with the aggressor or defensive identification—the child, treated punitively by the parent but fearful of further punishment if he fights back, avoids the conflict and gains further parental approval by taking on the characteristics and point of view of the parent. Although Freud considered this type of identification to be central to the development of a conscience, especially in the male, it is now often thought of as a more or less temporary mechanism or one which leads to an aggressive, hostile outlook toward the world rather than a process which underlies the development of an inner conscience (11). The other type, referred to as developmental or **anaclitic** identification (7), is based on the child's anxiety over the loss of the parent's love. To get rid of this anxiety and assure himself of the parent's continued love, the child strives to become like the parent—to incorporate everything about him including his moral standards and values. This type of identification, seen by Freud as especially characteristic of females, is assumed by most present-day writers to underlie the development of an inner conscience.

Numerous attempts have been made in recent years to clarify these concepts and to place them within broader theoretical frameworks. In each case the concepts are modified somewhat in line with the author's theoretical preference, resulting in a variety of subtly different notions that have guided the empirical research on identification. With each investigator stressing one or another aspect, e.g., motivation to emulate the parent, actual similarity between parent and child, or similarity as perceived by the child, the measures used have been many and varied and there has been little overlap between those used in the different studies.

In a study of 5-year-old boys (30) the manipulation of the father doll in a structured doll play situation was used as an index of father identification and was found to relate positively to the father's warmth and affection toward the boy, as reported by the mother. Further evidence that paternal warmth contributes to the boy's identification with the father comes from a study of high school juniors and

seniors (27) in which an "actual similarity" measure of identification was used —the extent to which the boys responded to personality and attitude tests the same way their fathers did. Here a positive relationship was obtained between identification and the perception of the father as warm, helpful, and kind—as revealed by the boy's completion of a number of stories dealing with family interaction, e.g., one in which an adolescent boy wants to use the family car. The results of these two studies are generally taken as support for the anaclitic view of identification. Although they demonstrate that identification relates to *receiving* parental love—rather than being *threatened with its loss,* as the anaclitic view would predict—it seems reasonable to assume that discipline by a loving father is more apt to elicit anxiety over love-withdrawal than discipline by a nonloving one.

Seemingly contradictory findings were obtained in another study, using high school senior boys as subjects (10). This study was guided by the Freudian notion that the boy, motivated by fears and anxieties related to hostility toward his father, shifts his identification from the mother to the father during the Oedipal phase of development. Identification with the father was measured in terms of the similarity between the boy's responses on a vocational interest blank and the responses he thought his father would make. In accordance with the theory, identification was found to relate positively to intensity of **castration anxiety**, as measured by the Blacky Test —a projective device using dogs to represent family figures. On the assumption that castration anxiety in boys signifies the fear of a physically punitive father, this finding is viewed as providing some empirical support for the notion of identification with an aggressive parent rather than with a loving one.

Thus, although the aggressive and anaclitic conceptions of identification dynamics are quite different, each has some empirical support. It is difficult to assess which receives the greater support, since the identification measures used in these studies differ widely and we do not know which are more valid. While these measures leave much to be desired (6), they all have a certain amount of face validity since they tap aspects of behavior which are manifestly close to the concept of parent identification. Thus, two deal directly with the similarity—real or perceived—between the child and his own parent. The third is less direct and makes the assumption that taking the father role projectively reflects identification with the father, and not merely with adult males in general or with an abstract conception of the paternal role. But the subjects in this study seem young enough to justify this assumption.

The other studies of the antecedents of identification generally support the view that love rather than punitiveness is the significant parent variable, but the evidence provided is limited since the identification measures used are highly indirect and therefore of questionable validity. These measures deal with personality characteristics such as sex-role typing (8, 20, 24, 25) and conscience (31) which are sometimes presumed on theoretical grounds to be consequents of parent identification and therefore adequate as measures of identification. However, they may also result from other developmental processes including identification with persons other than the same-sexed parent.

A possible explanation for the support given both the aggressive and anaclitic conceptions is that the significant antecedent of father identification is the father's *salience* in the child's experience, which can be heightened by *either* affection or punitiveness. Another possible explanation, suggested by the predominantly lower class sample in the study finding father identification related to punitiveness (10) is that identification may have different bases in different segments of the population. Identification with the aggressor may more often be the underlying process in the lower class setting with its more traditional orientation

toward obedience and more frequent use of physical discipline (1, 4, 5, 15, 18). In the more psychologically oriented middle class, on the other hand, the parental pattern may be more conducive to anaclitic identification.

Knowing the antecedents of identification, however, would still leave us a long way from our goal of understanding the dynamics of conscience formation. For one thing, there is no empirical support for the implicit assumption made by some researchers that identification is total, i.e., that the child strives to emulate the parent in all respects. It is therefore theoretically possible for a highly motivated child to adopt certain valued parental characteristics like mechanical skills, social prestige, sense of humor, and power, but not others, values and moral standards included. Even assuming identification in the moral realm, the child's moral structure would still be unknown unless the particular parental standards internalized could be ascertained. Another reason for not inferring conscience from parent identification is that parents' consciences vary in strength and in content. The child who identifies with his parent is not necessarily more moral than one who identifies with a teacher, minister, or older sibling. The general problem of the relation between the process of identification and what aspect of the parent model is internalized is highlighted by the finding, reported by McCord and McCord (21), that boys whose fathers are criminals are less apt to become criminals if accepted by their fathers than if rejected by them. Apparently paternal acceptance may operate *against* identification when the parent model is opposed to the norms of the larger society.

Perhaps the precise role of parent identification in moral development would be clarified by developing measures of the child's identification with the parent's moral standards and using these in conjunction with independent indices of what the parent's moral standards actually are. These measures might then be studied in relation to the child's identification in other areas than the moral and in relation to parental practices.

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Reactions to Transgression

A more profitable approach to the role of the parent in the child's moral growth is to drop, tentatively, the assumption that identification is the intervening process and study the various manifestations of conscience more directly. The focus of our research efforts would then become the parent's role in developing a child whose motives are generally to behave in a morally acceptable way; who, when under pressure from external forces or inner desires to violate a moral standard, can generally exercise the controls necessary to resist these pressures; who, when he does submit to temptation or accidentally violates a standard, can generally be expected to recognize the wrong, be aware of his own responsibility, experience an appropriate amount of guilt or remorse, and attempt to make reparations where possible. Further, to react in all these ways not due to fear of external consequences but due to an inner moral sense.

Allinsmith distinguished between two broad types of discipline: corporal discipline, which includes spanking, whipping, slapping, and beating the child, and psychological discipline, which includes manipulation of the child by shaming, appeals to pride and guilt, and expressions of disappointment. His hypothesis that psychological discipline would contribute to guilt severity, especially around aggression, was derived from the theory that in disciplining the child psychologically the parent provides a model of self-restraint about aggression and about the manner in which to express disapproval, thus contributing to the child's tendency to inhibit and feel guilty about his own hostile tendencies. Further, in psychological discipline the punishment is not likely to be gotten over and done with, and the parent's anger is apt to smolder unexpressed and thus convey strong disapproval, thereby increasing the child's anxiety about displeasing the parent. The

parent who favors corporal punishment, on the other hand, was viewed as providing a model of aggression and as condoning it implicitly, if not explicitly, and also as providing the child with a suitable target for the direct expression of aggression. Allinsmith found no relationship between the two discipline categories and the child's guilt, but in a later study (3), using a more homogeneous middle class college sample, he found that male students who recalled both parents (especially their mothers) as having used mainly psychological discipline obtained higher guilt-over-aggression scores on a story completion measure than those whose parents used corporal punishment. The female subjects only showed a slight tendency in the same direction, but, as the authors point out, this may be due to the fact that the story-beginning used was designed for boys and had a masculine theme. Heinicke found a similar pattern with his 5-year-olds. The frequent use of praise and the infrequent use of physical punishment and isolation related to high guilt. Heinicke also found that the parent's expression of affection toward the child is positively related to the child's guilt.

Further evidence for the relation between psychological discipline and guilt severity comes from the Whiting and Child cross-cultural study (33). They found a positive relation between their cultural index of guilt and the prevalence in a culture of "love-oriented" techniques of discipline. These techniques overlap considerably with those fitting Allinsmith's "psychological" category. However, whereas Allinsmith views these techniques as providing a model of restraint, Whiting and Child's theory is that they contribute to guilt by keeping the child oriented toward the goal of affection and at the same time arousing uncertainty as to the attainment of this goal. Examples are rewarding by praise, punishing by isolation, and punishing by the withdrawal of love.

Sears, Maccoby, and Levin (31) found similar results with kindergarten children, using as a measure of conscience another aspect of the child's behavior following a transgression: whether he characteristically confesses, hides, or lies—as reported by the parent. This index related positively to the mother's reported use of love-oriented techniques and negatively to the use of object-oriented techniques (tangible rewards and incentives, physical punishment, deprivation of privileges as punishment). But the love-oriented discipline pattern was found to relate to the child's conscience only in conjunction with the frequent expression of love and affection. That is, mothers who were both warm and used love-oriented techniques produced children who tended to confess to their deviations rather than hide or deny them. The author's explanation for this finding is that the effectiveness of love withdrawal depends somewhat upon the amount of love that is being taken away. That is, the child who generally experiences a warmly affectionate relationship with his parents is more affected by the threat that this relationship will be broken than the child who has never enjoyed such parental warmth. In response to the pressure to devise habitual means of insuring the continuation of the parent's love, the child adopts as his own the parent's restrictions and ideals.

Aronfreed (4) investigated still another aspect of the child's post-transgression behavior: whether it is motivated by internal or external forces. He studied sixth grade children, using a projective story completion technique. In each story-beginning the central figure commits an act of aggression, the stories varying with respect to the person toward whom the aggression is directed and in the type of aggression expressed. The story completions were coded according to whether the central figure, without any reliance on outside forces or events, accepts responsibility for his action and actively seeks to correct the situation, for example, by making reparation or modifying his future behavior in the direction of social acceptability; or whether the events following

the transgression are dominated by external concerns, mainly in the form of accidents or other unpleasant fortuitous happenings. Data on parent discipline were obtained by interviewing the mothers about how they handled aggression in the child. The discipline techniques reported were classified as "induction" techniques or "sensitization" techniques. The "induction" category is similar to Allinsmith's "psychological" one, but in his theory about the effects of this type of discipline Aronfreed focuses not so much on its relevance for the kind of behavior model presented the child, as Allinsmith does, but more directly on its capacity to arouse unpleasant feeling reactions in the child about his misbehavior, reactions which are seen as being independent of external threat. Certain induction techniques (asking the child why he behaved as he did, insisting that he correct the damage he has done, or refraining from punishment when he takes the moral initiative) are also seen as encouraging the child to accept responsibility for his actions. And others, especially the use of explanations or reasoning, are viewed as "utilizing a verbal and cognitive medium of exchange that can provide the child with his own resources for evaluating his behavior" (4, p. 226). The "sensitization" category resembles Allinsmith's "corporal" techniques but also includes attempts to control the child through direct verbal assault (yelling, shouting, bawling-out, etc.). These techniques are viewed as attempting only to extinguish or control the child's unacceptable behavior and as tending "not to be translated into a set of independent moral functions because they emphasize only the painful external consequences of the child's transgression and the importance of external threats or demands in carrying out moral actions" (4, p. 226). Aronfreed found, as he hypothesized, that the use of induction techniques is positively related to a high degree of internally motivated self-corrective action in the child stories and with the absence of punishment from external forces. Mothers who used more sensitization techniques, on the other hand, had children whose stories contained more external punishment.

Hoffman and Saltzstein (16) obtained similar results with seventh grade children. The children were asked to make moral judgments about norm violations (e.g., stealing, lying, violating a trust) committed under different conditions and to give the reasons for their judgments. Their responses were classified as expressing an internalized standard or merely the fear of detection and punishment by external authorities. The data on parental practices were obtained from the children's responses to highly structured objective items bearing on the parent's current disciplinary pattern in several types of situations, expressions of affection toward the child, and participation in child-centered activities. The results were that the more internalized boys as compared to those who were more externally oriented reported that both parents were more permissive in their discipline; that their mothers less often used techniques which openly asserted their power over the child (this category included the use of force, threat of force or deprivation, and direct commands, and therefore resembles Allinsmith's "corporal" and Aronfreed's "sensitization" categories); that their mothers more often used techniques indicating the painful consequences of the child's act for the parents; and that their mothers were more affectionate. The only significant findings for girls were that the internalized girls less often reported their mothers as threatening to have their father discipline them and more often reported their fathers as using rational appeals in their discipline. The internalized subjects of both sexes also gave more consistently severe guilt responses than the externals on a story completion measure. Thus, although the above findings are more directly relevant to the child's conscious moral orientation, they also have a bearing on his reactions to transgression.

Despite the diversity of theoretical approaches, measuring instruments, and

moral content areas involved in the studies discussed in this section, their results have a common core of agreement that is encouraging. The relatively frequent use of discipline which attempts to change the child's behavior by inducing internal forces toward compliance appears to foster the development of an internalized moral orientation, especially as reflected in the child's reactions to his own transgressions. The use of coercive measures that openly confront the child with the parent's power, on the other hand, apparently contributes to a moral orientation based on the fear of authority.

Further, the studies in this group that include data on parental affection (13, 16, 31) suggest that this variable, too, contributes to internalization. Putting all of this together, we may tentatively conclude that an internalized moral orientation is fostered by an affectionate relationship between the parent and child, in combination with the use of discipline techniques which utilize this relationship by appealing to the child's personal and social motives.

Resistance to Pressures to Deviate

Perhaps a more important index of conscience than the child's reaction to transgressing is the degree to which he behaves in accordance with his standards and avoids transgressing in the first place. The ability to resist pressures to deviate from one's standards may be a better test of their strength and integration with the personality than the experiencing of guilt after having transgressed. Pressures to deviate may be external (e.g., peer-group pressures) or internal (e.g., desires for objects which are themselves forbidden or which require prohibited action for their attainment). Some research has been done on parental antecedents of the child's response to external pressures (14, 26), but not where the pressures were opposed to the child's values and standards. The latter is an important aspect of the larger social problem of how the individual learns to resolve conflicts between inner- and other-directed pressures (29). There is need for empirical research on this problem, for example, on the antecedents of the moral strength or courage necessary to resist social pressures to deviate from one's internalized standards, and, more generally, on the antecedents of how one copes with conflict between moral norms internalized in the home and opposing pressure from peers.

Although external pressures against moral standards have been neglected in research, considerable work has been done on resistance to inner temptation. In the Allinsmith study already cited, two additional story-beginnings were included, one dealing with theft and the other with disobedience, in which the hero has not yet transgressed but is tempted to do so. The subject's resistance-to-temptation score was determined by whether or not in his story-completions the hero transgressed. One of the several parental background variables investigated, the use of explained requests rather than arbitrary demands, was found to be positively associated with the resistance-to-temptation scores obtained for both stories. In an earlier study MacKinnon (22) used a more direct behavioral index of resistance to temptation. His subjects, all college students, took a written test under conditions of no tangible reward. Cheaters were detected without their knowledge by observations through a one-way screen. Data on early parental practices were obtained from questionnaires filled out by the student. The findings showed a positive relation between physical punishment and cheating and between psychological punishment—defined as techniques which indicate that the child had fallen short of some ideal in some way or hurt the parents and therefore that they love or approve of him less—and not cheating. Although these results are broadly consistent with Allinsmith's findings, the latter's own measures of psychological and corporal discipline did not relate to resistance to temptation.

Further confusion as to the antecedents of resistance to temptation is apparent when we examine the results of the three most recent studies in this area. Two used preschool age children (9, 32) and the other, 11- to 12-year-olds (12). All three used the child's behavior in an experimental test situation as the index of his ability to resist temptation. The test consisted of placing the child in a situation in which he was tempted to violate the rules of the game in order to win a prize and then leaving him to play alone. Although the child thought no one was watching him, his reactions were observed through a one-way-screen, as in the MacKinnon study; and he was assigned scores indicating whether or not and to what degree he cheated or resisted the temptation to do so. All three studies used parent interviews consisting of a large number of structured and unstructured items, and there is considerable overlap in the items used. Despite the similarities in conceptual approach, the way in which resistance to temptation was measured, and the parent interview items used, the findings in the three studies have little in common. Each investigator found several parent variables to relate to the child's ability to resist temptation, but there was little agreement among them as to which of the many parent variables used were the ones which related significantly to the child measure. Further, in those few cases in which the parent variables relating significantly to the child's resistance to temptation were similar, the direction of the relations were as likely to be discrepant as not. Here are two examples: Burton *et al.* and Grinder each found the severity with which the child was weaned to relate positively to resistance to temptation, but Sears *et al.* found the same variable to relate negatively; and, whereas the general pattern of the Grinder and the Sears *et al.* findings was for resistance to temptation to relate to verbal rather than physical means of control, the Burton *et al.* findings tended to be in the opposite direction. Finally, none of these three studies replicated MacKinnon's findings of a positive relation between psychological discipline and not cheating, although all three had obtained psychological and physical discipline scores roughly comparable to those used by MacKinnon.

Generalizations about Parental Antecedents

Though definite conclusions can not be drawn from the work on parental antecedents of moral development done thus far, several tentative generalizations can be made which may help serve as a guide for future research in this area. The first is that the research generally supports the view that the frequent expression of warmth and affection toward the child helps promote identification with the parent, although there is some evidence that a threatening and punitive approach might in some cases also contribute to identification. Second, the use of discipline techniques which attempt to change the child's behavior by inducing internal forces toward compliance (e.g., by appealing to the child's needs for affection and self-esteem and his concern for others), especially in the context of an affectionate parent-child relationship, appears to foster the development of an internalized moral orientation at least with respect to one's reactions following the violation of a moral standard. The use of techniques that involve physical coercion or that directly assert the parent's power over the child, on the other hand, are more conducive to the development of a moral orientation based on fear of external detection and punishment. The third and most tentative generalization is that the particular kind of psychological techniques used, i.e., the particular aspect of the child's need system to which appeal is generally made, may affect the type of internalized morality that develops, e.g., whether it is oriented predominantly toward human need or conventional authority, and the degree to which it is integrated with the rest of the personality. Summarizing and stating these generalizations most broadly, we would offer the

following tentative synthesis of the research findings to date: affection contributes to identification; psychological discipline which capitalizes on the affectionate relationship (and its resulting identification) fosters the development of internalized moral structures in general; and variations in type of psychological discipline may then account for the particular kind of internalized moral structure that develops.

The Role of the Father

In the studies reporting data on the discipline used by both parents, father discipline emerges as relatively unimportant in young children but as taking on increased significance with older ones. Perhaps it is only after the child has attained a relatively advanced level of cognitive maturity that the father's discipline can have important effects despite his absence most of the day from the child's immediate life space.

The influence of the father is most pronounced in the two studies using college students as subjects: in one (3), discipline by the father as well as the mother related to guilt, and, in the other (22), discipline by the father and not the mother related to resistance to temptation. In addition to highlighting the increased importance of the father with age, these findings, together with those obtained in the studies of younger children, also seem to suggest that mothers and fathers may be particularly influential with respect to different aspects of moral development. That whereas the mother may be the main socializing agent with respect to guilt, the father may play the more important role in the development of resistance to pressures to deviate from moral standards. At least this may be true for boys—perhaps, because of the importance that self-control, a masculine ideal in our culture, has for this aspect of morality. Thus, early discipline by the mother may contribute more to guilt and later discipline by the father, to the controls necessary for resisting pressures to transgress.

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SUGGESTIONS FOR FURTHER READING

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7

THE CHILD IN THE FAMILY

In all societies and all ages, the family has constituted the "social matrix" within which the child develops (Clausen, 1956). Moreover, the nuclear family is part of the kinship system; and such families and systems collectively make up the larger social system and culture. Singly and collectively, parents continuously modify the culture, while, at the same time, acting as society's agents in socializing the child.

The pervasive influence of family life is matched by a literature so extensive that sorting out the data and relating the findings are difficult. Much of this research is directed toward testing long-held, often tacitly accepted views. For example, we have assumed that the family's effect on the child is paramount, and that assumption is repeatedly underscored by research. We have also assumed that the child suffers whose parents are divorced, whose mother works, or who suffers any form of maternal deprivation. However, the presumed ill effects of the parents' divorce or the mother's employment have been found to be considerably exaggerated. And the effects of maternal deprivation, a topic that has inspired professional comment for a half century or more, are no more clear-cut. Early studies reported the physical and psychological effects of hospitalization on infants. However, more recent studies indicate the need to distinguish the impact of maternal separation from that of institutionalization. The type of institution and the relationship between mother and child before and after separation are among the significant variables involved. The study of a foundling home in Lebanon failed to support the hypothesis that early deprivation necessarily leaves permanent effects (Dennis & Najarian, 1957).

Some researchers ask whether the infant separated from his mother suffers more from sensory deprivation than from lack of love. Certainly, neither animal nor human infants progress normally without sufficient stimulation. Animals reared in isolation and denied normal interactions with the social and physical environment later on manifest mental deficiency and behavior disorders. However, Ainsworth (1964) concludes that the human infant needs something more than sheer stimulation for the development of normal attachment behavior. She suggests that something like imprinting may occur among humans to account for the formation of early attachments. Imprinting refers to the "stamping in" of an experience merely because it occurs at a relatively specific, or critical, period, usually early in life. Other researchers have sought to establish what, if any, critical periods exist later in life—that is, whether there are times when a given influence may have greater impact than ever before or again. While there is evidence to sug-

gest the existence of such periods, there is considerable skepticism regarding them. Certainly, if such periods are found to exist in childhood, the significance of the family is underscored.

Efforts have also been made to determine the outcomes of various patterns of child-rearing; but few investigators are ready to express their conclusions in more than general terms. For one thing, each family is a unique constellation of interacting personalities; and what may be an effective way of functioning within one family may not be in another. For example, a child whose personality is compatible with those of his parents and siblings may profit from a more close-knit family life than would a child whose needs are highly distinctive.

About mid-century, Orlansky (1949) reviewed the literature and failed to find meaningful correlations between highly specific child-training practices, such as manner of feeding or toilet-training, and future personality. He concluded that determining the significance of different types of child-training required a more complex approach. In the years that have followed, his prediction has proved true. For instance, Heinstein (1963) found no relationship between either type or duration of feeding and later problem behaviors. However, *combinations* of type and duration of feeding, sex of child, and general characteristics of the mother did relate to later behaviors.

Another long-standing favorite of family-life researchers is parental discipline. Investigations typically hinge on the issue: Which is better for the child, authoritative or permissive control, or some combination of these? It seems that punishment, unwisely used, yields a plethora of evils. However, Baumrind (1966) distinguishes between authoritarian (conforming to a set morality, which is given) and authoritative (rational, issue-oriented) control. After reviewing 12 relevant studies, she concluded that authoritative control produces responsible conformity without loss of autonomy. By contrast, Sears, Maccoby, and Levin (1957) reported that children thrive best when parents are warmly permissive, yet withdraw love when the child disobeys.

Considerable research also relates variations in family structure to child personality. Sometimes research focuses on one or two key factors—for example, family roles, consequences of ordinal position, family size, sex, and age of children. Altus (1966), for example, studied ordinal position, and reported that first-borns are variously described as more affiliative, conservative, curious, and conscientious than later-borns. In another study, Finney (1961) reported that children whose mothers were nurturant proved to be hostile, dependent, lacking in conscience, and pessimistic.

Especially since computers have become available, more researchers are studying the interrelationships of several variables. Rosenberg and Sutton-Smith reported the related effects of family size, ordinal position, and sex of offspring. For instance, the superiority of the first-born was less in a three-child family than in a two-child family; and in the three-child family, girls with brothers did better than girls without brothers, while boys did better when they had siblings of both sexes (Rosenberg & Sutton-Smith, 1966).

Computer research also makes possible a better appraisal of the complex ways that family members interact with each other. Traditionally, we have focused on the parent's effect on the child (Wenar & Wenar, 1963). Actually, a child also feels the impact of his effect on his parent. Thus feelings and attitudes are derived from a constant interplay of actions and reactions. The parent must at once be child technologist, social psychologist, and dispenser of love and wisdom in order to control adequately the dynamic organism that is his family.

The missing person in most family-life research has been the father. Meantime, this neglect of the father may have distorted our understanding of child development and adversely affected our rearing of boys (Nash, 1965). Recently, the father has been receiving some recog-

nition, but the flow of studies in this area is still no more than a trickle. Such research as exists indicates that today's father, especially in the middle and upper classes, insists on being a father in far more than the biological sense.

A research area already recognized, and becoming more so, is social class as a factor in child-rearing, especially as it relates to problems of the disadvantaged child. For example, one study reports that middle-class mothers, more often than working-class mothers, reason with their children (Newson & Newson, 1967). Hence the middle-class child comes to value verbal behavior more than does the working-class child.

One point at issue in family research is this: What is the American family of today like, and the child's role within it? Or is every family unique, with a miniculture of its own? Reuben Hill's excellent article answers this question, describing ways in which today's family is distinctive. Dr. Hill, Professor of Sociology at the University of Minnesota, discusses the changes in American family patterns and the implications of such changes for social action.

The selection by Dr. Glen Elder of the University of California at Berkeley and Dr. Charles Bowerman of the University of North Carolina is illustrative of many studies designed to determine the effect of particular variables on family relationships. The authors focus on family size, sex composition, paternal involvement, and behavior-control methods, and on how all interrelate in determining children's behaviors. Considerable support was found for the hypothesis that paternal involvement and external behavior control are present more often in large than in small families and more often in families composed of boys than of girls.

Urie Bronfenbrenner's provocative selection places child-rearing patterns in perspective by tracing changes over the quarter century preceding the 1960s. Dr. Bronfenbrenner, Professor of Child Psychology and Family Relations at Cornell University, New York, and one of the founding fathers of Head Start, examines complex relationships within the family by comparing the present-day function of the family with that of the past. He concludes that certain responsibilities for children have shifted from the family to society. The child himself has both gained and lost from this new emphasis. Nevertheless, states Bronfenbrenner, society should recognize and assume its new responsibilities, which so far it has failed to do. He concludes that both parents are becoming more affectionate and permissive, and that the father, especially, is increasingly less authoritarian. While this love-oriented technique produces well-socialized children, Bronfenbrenner suggests it also produces patterns of conformity, anxiety, and reduced aggressiveness.

THE AMERICAN FAMILY TODAY

REUBEN HILL

At the turn of the century, most people had the greatest respect for the institution called the family, yet they were loath to learn much about it. The family was taken for granted, ignored, shunted

Abridged from "The American Family Today," in *The Nation's Children,* Vol. 1, ed. Eli Ginzberg (New York: Columbia University Press, 1960), pp. 77–106. Copyright © 1960 Golden Anniversary White House Conference on Children and Youth, Inc. Reprinted by permission of the author and the publisher.

aside, and expected to do the nation's patching and mending without reward or attention. According to the cherished beliefs of the period, all husbands and wives lived together in perfect amity and all children loved their parents, to whom they were indebted for the gift of life. Moreover, even if one knew that these things were not true, he ought not to mention it!

Today much of that has been changed. Gone is the concealment of the way in which life begins, gone the irrational sanctity of the home. The aura of sentiment which once protected the family from discussion clings to it no more. It is no longer considered a virtue to be naive or ignorant about the family. We want to learn as much about it as we can and to understand it as thoroughly as possible, for there is a rising recognition in America that vast numbers of its families are in trouble—sick from internal frustrations and from external pressures in a society which expects the individual family to act as buffer between a poorly integrated social order and the country's children. If fiscal policies are bungled and inflation results, the family purse strings are tightened; if real estate and building interests fail to provide housing, families must adapt themselves to obsolete dwellings or be shoehorned into quarters shared with other families.

The now famous Bill of Rights for Children of the 1930 White House Conference would be no more than a list of platitudes if individual families did not secure these rights for their children. Alas, this is too much to expect of economically and educationally marginal families. This is one reason subsequent White House Conferences have included analysis of the optimum relationship between the family and government and between the family and community planning. We are engaged in the process of reconstructing our family institutions in these conferences through criticism and discussion.

As the ban on discussion of the family has been lifted many have assumed expertness in diagnosing the American family's ills—and their approach usually begins "What's Wrong with the Family?" A wide variety of writers have addressed themselves to this theme recently, and the range of national magazines carrying their articles suggests the high readership provoked by problems of courtship, marriage, and the family. *Life, Look, McCall's, Ladies Home Journal, Better Homes and Gardens, Harper's,* and *The Atlantic* have featured the family and its problems in recent months. College presidents, psychiatrists, ministers, social workers, and judges appear frequently, but included among the authors can be found a labor leader, a motion picture arbiter, an anthropologist, a political commentator, and the American Mother of the Year. Each touches the ailing body of the American family in a different place, but all agree she is ailing. They point to the high divorce rate, to the changes in our sex morality, to juvenile delinquency, and to the rise in forced marriages of teenagers as proof of the breakdown of the family. The causes they list are most varied:

It's the breakdown of character.

It's modern women—they ought to stay home and take care of their children.

It's the search for happiness—we need to return to the old-fashioned virtues of responsibility and adherence to duty.

Alcohol is the key to it all.

There aren't enough parks and playgrounds.

It's poor sex adjustment—what people need are the facts of life.

The trouble is easy divorce—people know they can get out of marriage if it doesn't work.

It's dissimilarity of family backgrounds and temperament.

I regard much of this hue and cry in the public press as useful and healthy, but I do not have too much confidence in the diagnoses advanced by America's self-styled family experts. . . .

In quick review I hope to answer three major questions: (1) What long-

term and what short-term changes are occurring in marriage and family patterns in America? (2) Is the family any less important to its members and to American society today than formerly? and (3) What are some implications for conference discussion and for social action of these changes in family patterns?

Changes in Marriage and Family Patterns

A number of changes in the family tend to be tied to the highly interrelated phenomena of industrialization, urbanization, secularization, and democratization. These we term long-run trends since they have been more or less continuous and cumulative in their impact on family patterns since well before the Civil War. Another set of changes should be designated as short term because they tend to be relatively temporary fluctuations around a long-term trend line. They may occur as a consequence of changes in the age and sex composition of the population, or may flow from the vacillations of the country's economy and polity best seen in the cycles of depression and prosperity, of inflation and deflation, and hot wars and cold wars.

As a backdrop for discussing long-term trends let us identify the typical family pattern of a century ago when we were largely a rural frontier society. . . .

One can recognize . . . many characteristics which have survived into the twentieth century: freedom of mate selection, separate domicile for newlyweds (although one couple in five begin marriage even today in the home of one of the parental families), parental subsidy of marriage (although the support today may need to be more subtle and less openly admitted). In other respects there have been tremendous changes as America has industrialized and urbanized, changes which we identify as long-term trends: changed ways of making a living, decreased self-sufficiency of families, smaller households, increased mobility of families, changed authority patterns, and changed age and sex roles within the family, to mention only a few. Activities once centered in the home, such as production of food and clothing, family recreation, vocational apprenticing, and religious instruction, have been shifted to canneries, factories, recreation centers, vocational schools and Sunday Schools.

From 1890 to 1960 the proportion of American families subsisting from farming changed from almost half to less than one-tenth. With this changed mode of making a living, the authoritarian, economically integrated, self-sufficient form of family which for centuries had been functionally adapted to rural living has become obsolete. As the family ceased to be a producer of goods and services, the need for an authoritarian foreman in the family disappeared. But as the family ceased to make its own living, and the father left the home to earn money to buy the goods the family once produced, the self-sufficiency of the family also disappeared. The rugged familism which extended the frontier and gave the tenor of individualism to America has disappeared except as it is found in isolated rural and mountain areas.

The family became dependent upon the availability of jobs, on continued prosperity, and on the productivity of the wage earner. Where the father's productivity was not great enough, mothers left the home to supplement the father's pay check. Children, once viewed as potential added hands who soon could earn their keep, have become in the industrial age mouths to feed, bodies to clothe, and minds to educate. Today children are financial liabilities from birth through their schooling. Conservative estimates place the cost of rearing a child to age eighteen at $20,000, and there is still his college education ahead of him.

In order to get ahead in the world young families have become mobile, migrating for added education, better jobs, and in response to the demands of military service. Compared with other countries of the world we are a people on wheels—1 family in 5 moves annually

and 1 in 3 of these crosses county lines every year.

In the course of these long-term shifts in the economy and the larger society the family has given up many services it once provided its members: schooling, religious instruction, recreation, medical care, and job placement. Many see in these changes evidences of family decay and disorganization, but I find abundant proof that there is no repudiation of the basic business of families; namely, reproduction, housing, feeding, socializing, and guiding children from infancy to adulthood. Indeed, the family is now more of a specialized agency concentrating on personality development of its members, providing warmth, love, and sanctuary from the anonymity of urban existence, services no other agency in society is prepared to offer.

Let us turn now for a moment in the examination of some short-run changes which have occurred in recent years. Family behavior has become increasingly subject to short-run fluctuations integrally related to the economic and political shifts in our highly interdependent type of society. Individuals are increasingly making their marital and reproductive decisions deliberately, taking into account their personal outlook of the moment. The result is often that millions make the same kind of decision at the same time. If conditions are bad as they were during the depression of the '30s, for example, people postpone marriage or if married put off childbearing. At that time hundreds of thousands of young women, after waiting for several years to marry, had to face the specter of spinsterhood because the men, when they did marry, turned to a younger age group for their brides. Later when conditions improved, young people who might have waited decided to marry, or if married decided to have children, and the marriage rates and birth rates responded violently. . . .

Let us turn to another trend . . . —namely, the size of completed families. Since frontier days the size of households has been shrinking steadily. In 1700, 7.4 children had been born to the average mother forty-five years of age and over. By 1910 the number had dropped to 4.7, by 1940 to 2.9, and by 1950 to 2.5 children.

A reversal of this long-term trend is in the making as a consequence of the prolongation of the baby boom of the 1940s and '50s. When a boom continues beyond ten years it begins to look like a trend. The increase in the birth rate was a direct result of the rapid increases in marriages of the war and postwar years beginning first with many more first babies, later with more second and third babies, and now fourth babies. Since 1950 the number of first babies has declined sharply just as the marriage rate has, both examples of short-run changes, but the number of second babies has held up, and third and fourth babies continue to increase. Comparing 1940–41 with 1954–55 the birth rate of third and fourth babies is up 70 percent.

The shift in family size, however, is not to large families of seven or more children, which have continued to decline from 15 percent of completed families in 1910 to less than 4 percent of completed families in 1957. Childlessness, at the other extreme, is also in decline, having dropped from 20 percent in 1940 to less than 10 percent in 1957. A recent nationwide study[1] could uncover no interest in childless or one-child families and found the most favored family size to be between three and four children. In successive polls the proportion favoring the four-child family has increased from 20 percent in 1941 to 41 percent in 1955, while the proportion favoring two children has declined from 40 to 19 percent over the same period. This same study provides evidence that the higher birth rates of the last fifteen years and the prevailing favorable climate for medium-size families will soon affect completed family size in the United States. Asking women not yet forty-five years of age how many

[1]Ronald Freedman, Pascal K. Whelpton, and Arthur A. Campbell, *Family Planning, Sterility, and Population Growth* (New York: McGraw-Hill, 1959).

more children they expect to have, the researchers found women born 1916–20 (who reach the end of childbearing in 1960–64) have had or expect to have 2.9 children, women born 1921–25 expect 3.0 children, and women born 1931–37 expect 3.2 children, which is substantially more than the 2.4 children produced by mothers who had completed their childbearing by 1950. It is rather exciting to see a long-term trend change directions.

Closely related to the trend of number of children is the pattern of spacing children, which has undergone some changes with the widespread use of birth control. There is now a tendency to bunch all the children in the early years of marriage, so that women complete childbearing in their late twenties and early thirties. The average mother in the United States in 1950 had her last child at age twenty-six. Coupled with an earlier age at marriage for husbands, which has dropped in sixty years from 26.1 to 22.6 and for women from 22.0 to 20.4, husband and wife have a much longer period of companionship together than their parents enjoyed. With her children in school by the time she is in her early thirties, the wife is freer to re-enter the labor force—40 percent of wives aged thirty to forty with children in school are gainfully employed. Indeed, there has been a 77 percent increase in married women ages thirty-five to forty-four in the labor force in the last decade.

Needless to say, this shortening of the period in which the husband must be the sole breadwinner makes marriage less of a financial commitment for men and brings to the relation a more companionate quality. The traditional sentiment that a new husband must support his wife as her father did has now been attenuated in nearly all strata of our society by the growing desire of wives to share in their husband's financial struggles.

Changes in Sex Roles

As a consequence of these many changes—younger age at marriage, changes in child spacing, as well as changed ways of making a living and the changed emphasis on services performed in the family—the relationships between husband and wife and between children and parents have changed sharply with respect to the locus of power and in the division of duties and responsibilities in the family. Wives and children are becoming economic partners with the husband-father in spending as well as in earning the family income. The family is becoming democratized in the process.

Participation by wives in family decision making extends beyond financial matters and is concurrently being strengthened by their higher education, wider contact outside the home, exercise of responsibility in civic associations, activities in professional organizations, and by explicit encouragement by experts. Male pretensions to superior authority are widely ridiculed in contemporary comedy, cartoons, children's literature, and other forms of popular art. Moreover, when family decision making is viewed as a symbol of power the superiority of shared power in creating and maintaining warmth and affection becomes evident. It is easier to love a reasonable, companionable man, and harder to love an authoritarian husband and father today.

Equally striking in the blurring of sex lines are the changes in the division of tasks and responsibilities in the home. Here the middle classes lead the way, according to a recent study covering hundreds of Omaha families at various educational and occupational status levels. The investigator asked who was primarily responsible for the performance of each of a hundred homely tasks that must be performed to keep a family going. His findings may be stated briefly:

1. The middle classes have gone farthest in bringing the husband into taking responsibility for family tasks, and also designate more tasks as the *joint responsibility* of husband and wife.

2. The lower classes placed more of the burdens on the mother and the children, while the upper classes were the only group to turn to outside help for any substantial proportion of family jobs.

3. For all classes, to be sure, the majority pattern is for the wife to assume responsibility for the greatest number of tasks (40–50 percent). Second most popular pattern is that of *joint responsibility* (25–28 percent); third in line is the husband assuming chief responsibility for 20–23 percent of tasks, followed by children with 6–10 percent, and outside help 1–14 percent of tasks.

4. Joint responsibility was the majority pattern for certain types of tasks involving especially control and decision making, such as disciplining children, training in manners, supervising school work, deciding when to buy a new car, planning the budget, and so on.

There remain today only two or three tasks securely monopolized by one sex: childbearing and sewing by the wife, and the most arduous physical maintenance chores by the husband. Painting, repairing, fueling, and car washing are increasingly taken on by the wife, sometimes alone, often with the husband. Her dress on these occasions will be male work clothes and her language will also often be appropriate to the task! . . .

The standard view that industrialization and urbanization are inexorably destructive of family stability and solidarity is . . . contradicted by the fact that the professional group, which has a low divorce rate, is also the fullest beneficiary of such aspects of industrialism and urbanism as the reliance on science, spatial and social mobility, and emphasis on the welfare and freedom of the individual. The professional group is most liberal in its views about divorce, and is most egalitarian in its views on the propriety of employment of married women and in espousing the notion of equal authority for husband and wife within the family. It appears to be the most cosmopolitan in the range of its choice of marriage mates; most heterogamous in crossing ethnic, class, and religious lines; least affected by propinquity and closest in ages at marriage. It would seem that voluntary commitments emphasized by the professional groups may be stronger bonds for marriage than the economic and legal sanctions which held together traditional families. To adapt an old saying, what is poison to the rural, traditional family may be meat to the urban, professional family.[2]

Professionalization of Family Roles

What do these trends I have cited add up to? Increasing specialization by the family in services performed for its members, increased emphasis on quality of performance, shift in focus from production of goods to interest in personality development of children, and high affirmation of companionship in marriage and parent-child relations. Possibly Nelson Foote's term, "The Professionalization of Marital and Family Roles," describes best what is taking place in America today.

Marriage is increasingly viewed as a kind of joint career for which preparation can provide the skills and insights to achieve success. Miller and Swanson have been tempted to call the emerging family the "colleague" family. "As specialists at work may find in each other skills they lack, but skills they equally need, and as they may defer to one another's judgment on the grounds of different competence without feeling that they have personally lost in prestige, so husband and wife may now relate in this way."[3] They see this trend toward specialization leading to the professionalization of the wife's functions. She can no longer learn them satisfactorily from her mother's tutelage and example; they must be rationalized. Intuitive processes give way to formal rules and special technical knowledge. Moreover, the skills employed are subject to improvement as they are submitted to critical appraisal and functional selection. In career terms, the women's magazines provide a kind of in-service training, supplemented with the postgraduate work of the mother study clubs, the meetings with the specialists at the nursery school, the cook-

[2]Foote, in *Transactions of Third World Congress of Sociology*, IV, 30.

[3]Daniel R. Miller and Guy E. Swanson, *The Changing American Parent* (New York: Wiley, 1958), pp. 200–1.

ing classes, and the growing number of handbooks for preparing unfamiliar or exotic foods.[4] The rise of college and high-school courses in preparation for marriage and parenthood attended by men as well as women and the development of counseling services further affirm this desire on the part of young people to get professional training for their marital and parental roles.

Planning for parenthood today actually goes beyond planning for the control of conception, although a recent nationwide study reveals that children born today are more likely than ever to be wanted, planned children. They are more likely to be seen as a fulfillment rather than a frustration of marriage goals today than in the depression and post-depression period. Planning for parenthood today includes programs of education for parenthood to facilitate the understanding of children in general and one's own children in particular and thereby to help parents contribute to the maximum development of their personalities. This is a trend of vast significance for personality development and mental health.

Not only are parents professionalizing their marital and parental roles, they are undertaking once again training of the child for the job world, not by providing technical skills but by helping him in human relations. The child must learn the nuances of interpersonal relations to function in the large and complex organizations of industry, business, and government. The child must study his own relations to others and gain better control over himself and his associates. Parents in the professions today do have relevant, hard-bought skills to make the critical judgments of social situations that their children will need. Miller and Swanson expect, moreover, a reappearance of the parent as the counselor and aid of his children after they have become adults and parents in their own right, thus enabling children to serve as a means of self-continuity and companionship as well as fulfillment.[5] In sum, parents have learned that in the contemporary world, a parent is far better advised to endow his child with competence in interpersonal relations than to leave him with "a competence" in the old sense of the word.

How Important Is the Family Today?

With this background in the vast changes that have occurred in the American family, how should we answer my second question, Is the family any less important to its members and to American society than formerly?

It must be granted that the present-day family is not the giant in numbers and functions that it was a century ago. We no longer count as members of our families our kin out to third cousins on either side, and often forget both sets of grandparents and any great-grandparents when we reckon our family size. The modern family, shorn of kinship attachments and bearing two to four children, is smaller and less of an all-purpose organization—but is it therefore less important?

It would be a mistake to assume that because many families are free floating and geographically rootless, most urban families are separated from significant supportive relationships. Recent studies in London, Detroit, Cleveland, and Minneapolis attest to the perseverance of reciprocal relationships of gift giving, visiting, mutual aid, and advice seeking between grandparents and their married children, and between nuclear families and their kinfolk. In charting the social network of families they still tend to list relatives above friends and neighbors as the first place to turn when crisis strikes.

Yet there have also been social losses in the streamlining and specializing of the modern family. The modern nuclear family focuses primarily on the maintenance of the marriage and the provision of services to the immediate offspring of the marriage. In specializing,

[4]Miller and Swanson, *Changing American Parent*, p. 201.

[5]Miller and Swanson, *Changing American Parent*, p. 204.

the family has not only given up *services* once provided by the traditional family but it has given up *people* who once could find a meaningful place there: maiden aunts, bachelor uncles, widowed and orphaned kin, and grandparents. As a consequence, many more individuals today live outside organized family groups in semi-isolation from the love and support families might give them.

American families are on the whole probably happier than they were in earlier times, yet so much is asked of marriage and the family today that many otherwise sound families experience relative deprivation. The standards of success today go beyond providing and getting ahead economically, beyond the maintenance of minimum goals of health and education for children, to include happiness and self-realization. Few families appear to measure up, yet every man regards a happy marriage as his right. The defects of the modern family develop primarily from the disabilities of the specific persons who marry and rear children. If greater stability of the family is ever to be assured, increasing the competence of young people in interpersonal relations and selecting people for marriage who are ready for parental responsibilities must be undertaken much more systematically.

Granting that marriages today are intrinsically less enduring, evidence can be brought to show that they are greatly improved in quality of performance and are more stimulating climates in which to rear children. In addition, the modern family has the virtue of fitting well the demands of our democratic and urban industrial society, something that would have been impossible to the larger, rooted, and authoritarian family of the past century.

Since the modern family is smaller, it is more mobile, moving where opportunities are to be found. The medium-sized family fits the occupational structure better, relying as it does on achievement on the job over kinship preference for getting ahead in the job world. Small nuclear families of husband, wife, and children, as contrasted with great extended families of the past, appear to be ideally adapted to the different degrees of social movement required by our open competitive type of class society—permitting movement both horizontally in geographic space and vertically in climbing the occupational ladder.

Extended families of the past, in sharp contrast, tended to standardize a single class status among all family members and impose barriers of vested family interests to thwart the principle of equal opportunities of all persons to strive for social mobility. To be sure, parents in nuclear families also confer their own class position initially upon their children, but this transfer of status is never sure or permanent, and eventually must be earned in occupational achievement. Great extended families have in the past constituted a threat to the integrity of public service, undermining democratic processes and the principles of career civil service by nepotistic manipulation of government in behalf of family members. They would seem to be much less well adapted to the economic and political structure of our contemporary society than present-day nuclear type families which are too small to participate in coalitions or to build pyramids of power within business or government.

Is the family any less important to American society than formerly? By virtue of its specialization and its close adaptation to the economic and political structure, the family fits contemporary American society remarkably well. Moreover, the modern family is fully as needed today as formerly since it has no serious competitors among the other agencies in our society for the performance of the personality-building functions in which it is currently specializing. We depend almost exclusively on the family today for the performance of the vital functions of reproduction, infant care, and socialization without which our society would disintegrate.

FAMILY STRUCTURE AND CHILD-REARING PATTERNS: THE EFFECT OF FAMILY SIZE AND SEX COMPOSITION

GLEN H. ELDER, JR.
AND
CHARLES E. BOWERMAN

Half a century ago, Simmel stressed the importance of numbers in group life.[1] As the size of a group increases, members are less likely to maintain a distinct identity, the number of possible relationships increases sharply, leadership becomes more differentiated, isolates and coalitions form, and consensus in decision-making grows more difficult. Many of the effects of group size were investigated by Bossard and Boll in regard to patterns of authority, affection, and personality development in large families.[2] Others have shown very little interest in family size as a variable in family and socialization research, a lack of interest surprising in view of the number of small-group studies employing group size as an independent variable.[3]

In response to this need and to the theoretical significance of the effects of family size on child-rearing practices, we will test a set of hypotheses, pertaining to the effects of the number and sex ratio of children in a family on two aspects of child-rearing: (1) the involvement of the father in rearing children, and (2) the differential use of certain practices and training techniques which represent methods of external rather than indirect control.

Methods of external behavior control are employed by parents to terminate or direct a child's behavior, i.e., autocratic control, physical punishment, shouting and criticizing. The effectiveness of these measures depends on parental action since they do not engage the child's own mechanisms of self-control; they represent an *imposed* system of controls, designed to elicit *obedience* and discourage the transgression of rules of conduct. In contrast, indirect methods, such as parental explanation and reasoning, work through the child's cognition and sense

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[1]In some prefatory remarks to his treatise, "On the Significance of Numbers for Social Life," Simmel points to the heart of the research problem we consider in this paper. "It will immediately be conceded on the basis of everyday experiences, that a group upon reaching a certain size must develop forms and organs which serve its maintenance and promotion, but which a smaller group does not need. On the other hand, it will also be admitted that smaller groups have qualities, including types of interaction among their members, which inevitably disappear when the groups grow larger." *The Sociology of George Simmel,* translated and edited by Kurt H. Wolff, p. 87. Two important laboratory studies of interaction in groups varying in size are the following: A. Paul Hare, "A Study of Interaction and Consensus in Different Sized Groups," *American Sociological Review,* 17 (June, 1952), pp. 261–267, and Philip E. Slater, "Contrasting Correlates of Group Size," *Sociometry,* 21 (June, 1958), pp. 129–139. For recent reviews of correlates of group size, see Edgar Borgatta, "Small Group Research: A Trend Report and Bibliography," *Current Sociology,* 9 (1960), No. 3; A. Paul Hare, *Handbook of Small Group Research,* New York: The Free Press of Glencoe, 1962, pp. 224–231; and Robert F. Bales, A. Paul Hare, and Edgar F. Borgatta, "Structure and Dynamics of Small Groups, A Review of Four Variables," in Joseph P. Gittler (ed), *Review of Sociology,* New York: Wiley, 1957.

[2]See James H. S. Bossard, *Parent and Child,* Philadelphia: University of Pennsylvania Press, 1953, and James H. S. Bossard and Eleanor S. Boll, *The Large Family System,* Philadelphia: University of Pennsylvania Press, 1956.

[3]Rosen comments: "Considering the sociologist's traditional and continuing concern with group size as an independent variable (from Simmel and Durkheim to the recent experimental studies of small groups), there have been surprisingly few studies of the influence of group size upon the nature of interaction in the family." Bernard Rosen, "Family Structure and Achievement Motivation," *American Sociological Review,* 26 (August, 1961), p. 346.

of right and wrong behavior to *induce* appropriate behavior regulation.

Since external methods attempt to arrest undesirable behavior without appealing to the child's understanding, there is often conflict between parent and child. Indirect or "psychological" methods of behavior regulation aim at reducing or eliminating motivational differences between parent and child, and eliciting compliance. It is true that parents who reason also use external techniques, such as the withdrawal of privileges, but other research has indicated two relatively distinct syndromes of discipline techniques: external methods such as physical punishment and symbolic methods such as reasoning.[4]

In the following analysis, we move beyond the question of how child rearing varies in families of different size to examine the effects of the sex of children on the patterns of child training observed in small and large families.[5] If, for example, fathers are generally more active in child rearing in the large family, to what extent does the number of boys and girls in the family influence this tendency? From teachers' ratings of 128 five and six year-old children, each of whom had one sibling, Koch found that boys were rated as more active, expressive of anger, quarrelsome, revengeful, given to teasing, extrapunitive, insistent on their rights, exhibitionistic and cooperative with teachers and peers. Girls, on the other hand, were rated as more tenacious of purpose, responsible, obedient and affectionate than boys.[6] These results suggest that boys with brothers and no sisters are apt to be more rigorously controlled by father than boys with sisters and no brothers.

Research that we shall discuss shortly indicates that family size, paternal involvement in child rearing, and the use of external behavior control are correlates of social class. In addition, available data suggest that paternal involvement and the use of external control methods vary with the sex of child. Social class and sex will therefore be controlled in the presentation of our hypotheses and in the subsequent analysis. It is true, of course, that the relation of social class to child-rearing patterns is an important research problem, but it has received much more attention than the one dealt with in this paper.

The Sample

Our data were drawn from a larger research project on adolescence in the Institute for Research in Social Science at the University of North Carolina. The principal objective of the larger study was to investigate types of parent-peer attitudinal orientations among adolescents, to analyze the social contexts and factors associated with basic patterns of orientation and to evaluate possible consequences of these patterns. Almost half the sample was obtained through public and parochial schools in central Ohio, while the remainder was obtained in public schools in central North Carolina. This sample included all adolescents in grades seven through twelve who were in school when a structured questionnaire was administered by teachers in the classroom in April and May of 1960.

For the present study, we drew a 40 percent random sample of the seventh-grade white Protestant students from unbroken homes, living mainly in urban

[4]Charles E. Bowerman and Glen H. Elder, Jr., Ch. 7 of *The Adolescent and His Family,* in preparation.

[5]Birth order and the spacing of children are two other important structural properties of the family not examined in this paper because of space restrictions.

[6]Helen L. Koch, "Some Personality Correlates of Sex, Sibling Position and Sex of Siblings Among Five and Six Year Old Children," *Genetic Psychology Monographs,* 52 (1955), pp. 3–50. See also Orville Brim, "Family Structure and Sex Role Learning by Children: A Further Analysis of Helen Koch's Data," *Sociometry,* 21 (March, 1958), pp. 1–16. Similar sex differences in grade school children's evaluation of their peers were obtained in a study conducted by Tuddenham. R. D. Tuddenham, "Studies in Reputation: I. Sex and Grade Differences in School Children's Evaluations of their Peers; II. The Diagnosis of Social Adjustment," *Psychological Monographs,* 66 (1952), No. 333. Sharp differentiation of sex roles is clearly documented in Landy's careful analysis of child rearing in a lower-class rural Puerto Rican village. David Landy, *Tropical Childhood,* Chapel Hill: University of North Carolina Press, 1959.

areas, from the larger sample. We restricted the sample to children of one grade to insure the exclusion of subjects' siblings; only one report on each family and on each parent is included in the analysis.[7] We selected seventh graders because our interest is in child-rearing practices used more commonly on children of this age than on older youths.

Hypotheses

The Involvement of Father in Child Rearing

In an analysis of the large family system, Bossard hypothesized that "the larger the family group becomes, the more internal organization and dominance of some one or two persons appear," and as family size increases, "the stronger the position of the father as its directive symbol becomes."[8] Increasing centralization of leadership as a function of increasing size of group has been observed in a large number of task-oriented *ad hoc* groups in small group experiments.[9] Accordingly, we hypothesize that (1) *the probability of paternal involvement in the control and discipline of children increases as family size increases.*

Because of shared interests and other sex-linked factors, fathers tend to do more things with their sons than with their daughters. In a sample of 85 fathers with children ranging from new-born to 17 years of age, Tasch found that from the age of six there is an increasing tendency for fathers to engage in more activities with their sons than with their daughters.[10] Adolescent boys are much more likely to want to do things with and be with their fathers rather than their mothers.[11]

Results from a study of parental roles in child rearing indicate that working-class fathers are much less likely to see child rearing as part of their responsibility than are middle-class fathers.[12] These results suggest that fathers in the middle class are more likely than those in the working class to take leadership responsibility in child rearing. Thus, we hypothesize that (2) *paternal involvement in child rearing is most frequent when all of the children in the family are boys.* The hypothesized relationship should be strongest in large middle-class families.

Differential Use of Child-Rearing Practices

Since an increase in the size of a family heightens the complexity of intra-group relations and poses new problems in the fulfillment of individual and family needs, it is reasonable to assume that different methods of rule transmission and behavior control are employed. For instance, the time and patience needed to explain rules are no doubt less available to parents with large families.[13] As family size increases, parents may increasingly rely on strong behavior control, requiring the child to assume a passive role, and adolescents in large families may be less apt to feel that parental control has decreased over the past several years. And as family size increases, parental expressions of praise, approval, comfort and acceptance are likely to decrease in frequency per child.

External control is also more likely to be utilized by lower-class parents than by middle-class parents. Bernstein's research on social class differences in linguistic form indicates that lower-class

[7]Various restrictions and data processing problems made it necessary to limit our analysis to a 40 per cent sample of seventh graders. The 1,261 members of the sample are distributed as follows: middle-class boys (294) and girls (332); lower-class boys (287) and girls (348).

[8]Bossard, *op. cit.*, pp. 108–110.

[9]See A. Paul Hare, *Handbook of Small Group Research*, pp. 227–230. Hare suggests that "the development of leadership is possibly in part an alternative to an actual reduction in size" (p. 230).

[10]Ruth J. Tasch, "The Role of the Father in the Family," *Journal of Experimental Education*, 20 (June, 1952), pp. 319–361.

[11]Glen H. Elder, Jr., "Family Structure and the Transmission of Values and Norms in the Process of Child Rearing," unpublished Ph.D. dissertation, University of North Carolina, 1961, Ch. 10.

[12]Melvin L. Kohn and Eleanor E. Carroll, "Social Class and the Allocation of Parental Responsibilities," *Sociometry*, 23 (December, 1960), pp. 372–392.

[13]See, for instance, Lee Rainwater, *And the Poor Get Children*, Chicago, Ill.: Quadrangle Books, 1960.

parents are much less likely to use reasoning or offer explanations to their adolescent sons and daughters than middle-class parents.[14] Physical discipline, such as spanking and slapping, are used more frequently by lower-class parents.[15] Several other studies have shown that middle- and lower-class parents desire somewhat different qualities in their children beyond such core values as honesty.[16] While middle-class parents prefer their children to be curious, responsible and autonomous, lower-class parents tend to favor qualities such as obedience and respectability. Thus it seems that the organizational requirements and frustrations of a large family should *reinforce* the external control orientation of lower-class parents. If so, the relation between family size and parental control should be strongest among lower-class families. In order to examine this possibility, social class as measured by father's occupation, will be systematically controlled throughout the analysis.[17]

These expectations may be reduced to one predictive statement: (3) *Family size will be positively related to parental use of external behavior-control methods in child rearing.* Indicators of an external behavior-control orientation are the relative infrequency of adolescent independence in personal decision making, relaxation of parental control over time, parental explanations, and symbolic techniques of discipline. The relation between family size and external control should be strongest in lower-class families.

The sex of the child is likely to affect these relationships. Previous research has indicated that fathers are more likely to discipline their sons than they are their daughters,[18] while mothers are more likely than fathers to discipline daughters. One might also expect parental control, parental explanations of rules, and techniques of discipline to vary with the sex composition of the family. Since boys tend to be more assertive, aggressive, active and argumentative than girls, physical discipline, shouting and nagging may be more prevalent in families with several sons.[19]

A family that includes both sons and daughters provides parents with two sets of experiences, one introduced by the peer activities of sons, and the other by the girls' activities. For example, the onset of puberty is likely to heighten parental awareness of their daughters' sexuality. These factors, plus the intransigence and

SOCIAL CLASS	CATEGORIES
Middle	Professional, technical, and kindred workers, managers, officials, and proprietors except farm, clerical and kindred workers, sales workers.
Lower	Craftsmen, foremen, and kindred workers, operative and kindred workers, service workers, laborers except farm and mine.

[14]See two insightful research papers by Basil Bernstein on qualitative differences in cognitive expression between English middle- and lower-class parents and children. "Some Sociological Determinants of Perception," *The British Journal of Sociology,* 9 (June, 1958), pp. 158–174; and "A Public Language: Some Sociological Implications of Linguistic Form," *The British Journal of Sociology,* 10 (December, 1959), pp. 311–326.

[15]Bowerman and Elder, *op. cit.*

[16]Melvin L. Kohn, "Social Class and Parental Values," *American Journal of Sociology,* 64 (January, 1959), pp. 337–351; and "Social Class and Parent-Child Relationships: An Interpretation," *American Journal of Sociology,* 69 (January, 1963), pp. 471–480; Lee Rainwater, Richard P. Coleman, and Gerald Handel, *Workingman's Wife: Her Personality World and Life Style,* New York: Oceana Publications, 1959, p. 94; Gerhard Lenski, *The Religious Factor,* New York: Random House, 1961, p. 201; Urie Bronfenbrenner, "Socialization and Social Class Through Time and Space," Eleanor E. Maccoby, Theodore M. Newcomb, and Eugene L. Hartley (eds.), *Readings in Social Psychology,* New York: Henry Holt, 1958; and Alex Inkeles, "Industrial Man: The Relation of Status to Experience, Perception, and Value," *Journal of Sociology,* 66 (July, 1960), pp. 1–31.

[17]To place our respondents and their families in social class categories, we assigned fathers' occupation to the occupational categories used by the U.S. Bureau of Census. Since farmers, farm managers and farm laborers are not assigned a social class, they were removed from the larger sample; our sample was drawn from this non-farm sample and is therefore composed chiefly of adolescents in families residing either in urban or rural non-farm areas. On the utility of occupation as a single measure of social class, see Joseph H. Kahl and James H. Davis, "A Comparison of Indexes of Socio-economic Status," *American Sociological Review,* 20 (June, 1955), pp. 317–325.

[18]Andrew Henry, "Sibling Structure and Perception of the Disciplinary Roles of Parents," *Sociometry,* 20 (March, 1957), pp. 67–74, and Bowerman and Elder, Jr., *The Adolescent and His Family,* in preparation.

[19]Helen Koch, *op. cit.*

dislike of parental direction characteristic of youth of this age, suggest that a girl with brothers may behave differently and be perceived differently by parents than a girl with sisters only. While Tuma and Livson found a slight tendency for girls to be more accepting of authority than boys, we would expect girls in mixed-sex families to hold unfavorable attitudes toward parental control and thereby encourage greater behavioral regulation.[20]

These aspects of the possible effects of sex composition suggest the following hypotheses: (4) *Boys who have brothers and no sisters, in contrast to boys with sisters, are more likely to experience external behavior-control methods.* (5) *Girls who have brothers are more apt, than girls with sisters and no brothers, to experience external behavior-control methods.* External behavior-control methods are indicated by the use of physical discipline and negative verbal methods such as yelling and ridicule.

Differences in the value orientations of middle- and lower-class persons, such as those delineated by Miller and Reissman,[21] suggest that the hypothesized relationship for girls should be strongest in lower-class families. Since the number of child-rearing problems presumably increases as the number of children in the family increases, the sharpest differences in the direction predicted with respect to girls should occur in the large lower-class family.

Social class differences are less easily predicted for boys. In our society as well as in others there is greater pressure toward nurturance, obedience and responsibility in girls and self-reliance and achievement in boys.[22] Lower-class fathers may therefore stress obedience and responsibility less in rearing their sons than in rearing their daughters.[23] Thus, sex-composition effects on the rearing of boys, especially by their fathers, are more likely to be evident among middle-class families.

Family structure and child-rearing patterns: the effect of family size and sex composition

Results

The Involvement of Father in Child-Rearing

To test whether family size has any effect on paternal involvement in child rearing, we shall examine variations in parental roles in formulating rules of conduct, setting up and maintaining a policy of discipline, and in administering discipline (see hypothesis 1). . . . The data indicate that fathers are a little more likely to be dominant in rearing children as family size increases.[24]

Parental leadership in establishing rules of conduct was measured by asking each child the following question: "When your parents disagree with each other about what you should be allowed to do, which parent usually makes the final decision or has the greatest influence in making the decision?" (1) father, usually; (2) father, more often; (3) about equally; (4) mother, more often; (5) mother, usually. . . . The frequency with which paternal leadership in this area is reported tends to increase as family size increases, although percentage differences between small and large families, as well as the coefficients, reveal that the association is not very strong.

[20]Elias Tuma and Norman Livson, "Family Socioeconomic Status and Adolescent Attitude Toward Authority," *Child Development,* 31 (June, 1960), pp. 387–399.

[21]S. M. Miller and Frank Reissman, "The Working Class Subculture: A New View," *Social Problems,* 9 (Summer, 1961), pp. 86–97. See also William F. Whyte, "A Slum Sex Code," *American Journal of Sociology,* 49 (July, 1943), pp. 24–31 and Walter B. Miller, "Lower-Class Culture as a Generating Milieu of Gang Delinquency," *Journal of Social Issues,* 14 (1958), pp. 5–19.

[22]Herbert Barry, III, Margaret K. Bacon, and Irvin L. Child, "A Cross-Cultural Survey of Some Sex Differences in Socialization," *Journal of Abnormal and Social Psychology,* 55 (November, 1957), pp. 327–332.

[23]See Martin Gold, "Social Class, Family Structure, and Identity Processes Related to Juvenile Delinquency," paper read at American Psychological Association, New York, September, 1961.

[24]We have used in this analysis an asymmetric measure of association, dyx, developed by Robert Somers, "A New Asymmetric Measure of Association for Ordinal Variables," *American Sociological Review,* 27 (December, 1962), pp. 799–811.

In the initial analysis of family-size effects, we used five size categories ranging from one to five or more children. We found very small percentage differences between the one and two-child family and between the four and five-child family, with the largest differences among the two, three and four-child families. . . .

Since shared decision making is the modal pattern regardless of family size, it is useful to examine the ratios of adolescents checking father as dominant over those reporting mother as dominant in the final decision making: middle-class boys, 1.2, 1.8, 1.8; lower-class boys, .6, .7, 1.7; middle-class girls, .9, 2.5, 1.4; and lower-class girls, .4, .6, .8. Boys are more likely than girls to describe fathers as dominant, though the direction of the relation with family size is the same in all subgroups. Class differences within each family size category are relatively small with middle-class fathers more likely to be dominant in this area than lower-class fathers.

In regard to decision making on discipline policy, the question was: "When your parents disagree about your punishment, which parent usually makes the final decision? The response categories were the same as those listed for the previous item. . . . Again, the shared arrangement is the modal pattern regardless of family size. The ratios of reported father-dominance over mother-dominance show a gradual increase from small to large family for boys and girls. Only among lower-class boys do we find practically no relation between leadership on discipline policy and family size.

The administration of discipline presents a picture similar to policy-making on discipline. In response to the question, "Which parent disciplines, punishes, or corrects you *more often*?", we find that middle-class boys and girls are more likely to report father as chief disciplinarian if they have three or more siblings in the family than if they have fewer. The frequency with which paternal discipline is reported is negatively related to size of family for lower-class boys; among lower-class girls, the relationship is positive.

The discipline item, like the previous two, includes a response indicating *shared* administration of discipline, but this is usually not the modal pattern. The ratio of girls checking father as disciplinarian over those reporting mother increases from small to large families: middle-class, .4, .6, 1.1., and lower-class, .3, .3, .6. For boys, the ratios are: middle-class, 1.3, 1.6, 2.4, and lower-class, 1.3, 1.3, .8. These ratios and the percentages indicate that sons in large lower-class families are *less likely* to see father as the chief disciplinarian than they are in small lower-class families. Daughters of lower-class fathers, on the other hand, are slightly more apt to report father as the principal disciplinarian when there are four or more children. A satisfactory explanation of this difference is difficult to obtain with the data at hand. While Kohn and Carroll observe that working-class fathers were reluctant to participate in child-rearing matters, they do not discern differential involvement by the sex of the child.[25] Perhaps this difference in paternal involvement becomes more evident as the children become older (the Kohn and Carroll sample included boys and girls in the fifth grade).

To summarize: father is reported as being more likely to make decisions on child-rearing matters and act as chief disciplinarian as family size increases, except when the respondent is a lower-class boy. In accordance with hypothesis 1, paternal involvement is more likely in large families. Eleven of the 12 relationships . . . are in the direction predicted, though in most cases the degree of association is not strong. Results are weakest for lower-class boys, with only one relationship at least moderate in strength and in the predicted direction.

Differential Use of Child Rearing Practices

Parental Control and Explanations

We hypothesized that parental control is likely to increase as family size increases, and that parental explanation of rules is negatively related to family size (see hypothesis 3). . . . The strongest relationships are evident among middle-class boys and lower-class girls. As family size increases, adolescents in these two subgroups are more likely to report being dominated by their parents and having

[25]Kohn and Carroll, *op. cit.*, p. 385.

been given relatively few explanations of rules and policy. Let us examine the effects of family size on each variable in more detail.

In a recent study, it was found that parents are more likely to be autocratic in families with three or more children than in small families.[26] With the more detailed breakdown of family size given here, we note that parents who have four or more children are more likely to be dominant than parents with three children in the home, particularly in the case of girls. Parents of lower-class girls are more likely than middle-class parents to be dominant, especially in larger families.

The number of children in the family has relatively little effect on the reported dominance of fathers of lower-class boys. As in the case of discipline administration . . . father-son relations in the lower-class family do not support our hypothesis regarding family size effects on paternal involvement and control. In contrast, the lower-class girl in the large family is more likely to experience paternal involvement in child-rearing matters and autocratic or authoritarian control from both parents.

Family structure and child-rearing patterns: the effect of family size and sex composition

A child may feel that his parents currently give him more, less, or about the same amount of freedom in self-direction, compared to the extent of his independence a few years ago. We measured perceived stability of adolescent status in the family with the question, "Does your (mother/father) let you have more freedom to make your own decisions and to do what you want to do than (she/he) did two or three years ago?" A change in status is reflected by the responses (1) "much more," and (2) "a little more," while no increase in independence is indicated by (3) "about the same," (4) "a little less," or (5) "much less."

Children in large families are more likely than those in small families to report no increase in independence over the last few years (Table 1). All eight

[26]Glen H. Elder, Jr., "Structural Variations in the Child Rearing Relationship," *Sociometry*, 25 (September, 1962), pp. 252–256.

TABLE 1. *Parental Control, Persistence in Control Over Time, and Frequency of Expanations in Child Rearing, by Family Size, Sex and Social Class of Seventh Grade Youths*

				PARENT IS AUTOCRATIC OR AUTHORITARIAN IN CONTROL[a]		PARENT HAS NOT RELAXED HIS CONTROL OVER PAST FEW YEARS		PARENT INFREQUENTLY EXPLAINS RULES OF CONDUCT	
SEX	SOCIAL CLASS	SIZE OF FAMILY	N	% MOTHER	% FATHER	% MOTHER	% FATHER	% MOTHER	% FATHER
BOYS	MC	1–2	130	28	34	18	18	25	24
		3	90	30	45	12	21	36	42
		4 or more	74	37	43	20	28	33	39
		dyx	—	+.059	+.080	+.009	+.074	+.071	+.122
	LC	1–2	134	27	41	20	24	37	38
		3	93	35	42	29	31	34	37
		4 or more	105	35	44	26	35	41	45
		dyx	—	+.059	+.019	+.048	+.081	+.022	+.048
GIRLS	MC	1–2	122	16	22	8	13	19	21
		3	98	16	21	10	10	11	21
		4 or more	67	23	35	21	28	24	24
		dyx	—	+.033	+.066	+.065	+.070	+.012	+.014
	LC	1–2	127	27	38	12	18	23	33
		3	107	29	33	11	19	19	36
		4 or more	114	37	54	27	30	33	47
		dyx	—	+.067	+.102	+.102	+.083	+.068	+.090

[a] Each respondent was asked two similarly worded questions: "In general, how are decisions made between you and your (mother/father)?

Autocratic 1—My (mother/father) just tells me what to do.
Authoritarian 2—(She/he) listens to me, but makes the decision (herself/himself).
Democratic 3—I have considerable opportunity to make my own decisions, but (she/he) has the final word.
Equalitarian 4—My opinions are as important as my (mother's/father's) in deciding what I should do.
Permissive 5—I can make my own decision, but (she/he) would like me to consider (her/his) opinion.
Laissez-faire 6—I can do what I want regardless of what (she/he) thinks.
Ignoring 7—(She/he) doesn't care what I do.

relations between family size and perceived stability of parental control are in the expected direction. The relation between stability of control and family size is stronger among girls than among boys, and for paternal than for maternal control. The only social class difference appears among girls; the likelihood of no perceived relaxation of control increases more sharply with family size among lower-class girls. Whether their evaluation is valid or not, parental control during the transition from grade school to junior high is likely to be a source of conflict. Earlier research has indicated that reports of no increase in freedom were most common among youths who described their parents as autocratic or authoritarian, and were strongly associated with feelings of discontent and unhappiness.[27]

Similar results were obtained for parental explanations. We asked each child whether his parents explain the reason for rules that are not understood. *Infrequent* explanations are indicated by three responses—"never," "once in a while," and "sometimes," while "usually" and "yes, always" indicate *frequent* explanations. The relation between family size and reported frequency of parental explanation is relatively strong for both parents among middle-class boys and lower-class girls. Thus, the data on parental explanations provide some support for hypothesis 3: parental control is more likely as family size increases, especially among families of middle-class boys and lower-class girls. Of all youths in this study, middle-class girls are least likely to be exposed to this kind of regulation in each size of family.

For the most part, family size has relatively little effect on the training tactics of middle-class parents with respect to their daughters. Compared to boys in either social class and to their lower-class counterparts, middle-class girls are more likely to be included in decision making of personal relevance and to be given explanations of rules not thoroughly understood, whether or not they are members of large families. In contrast, lower-class parents appear to be particularly influenced by a large family in rearing their daughters. Though the probability of parental control and incommunicativeness is higher in the small lower-class family than in the middle-class family of comparable size, it tends to increase as family size increases. We will interpret these results more fully after we examine the effects of family size on techniques of discipline.

Techniques of Discipline

Emphasis on external behavior control may also be manifested in the types of discipline parents employ. If this approach to the rearing of children is more common as family size increases, we would expect parents in large families to be more likely to use physical punishment, ridicule, shouts, reprimands, and nagging, and less likely to offer praise, approval, and encouragement.

Hypothesis 3, which states in part that as family size increases, parents tend to use physical techniques of discipline more and verbal methods such as reasoning less, is supported in 17 out of 24 comparisons (Table 2), and some of the differences are quite large. We find strongest support for the hypothesis in relation to the use of praise, etc., while negative verbal methods show few consistent effects of family size. Among families of lower-class girls, all six relationships are relatively strong, while very little support for the hypothesis appears among lower-class boys, and the middle-class families are intermediate.

Family-size effects are particularly strong with respect to the frequency with which lower-class girls report physical discipline. A comparison of large and small families shows that a girl in a large lower-class family is twice as likely to report being disciplined in this manner as is her counterpart in a small family. Parallel to previous comparisons, family size has much less effect on the reported

[27]Elder, "Family Structure and the Transmission of Values and Norms in the Process of Child Rearing," *op. cit.*, Ch. 7.

TABLE 2. *Techniques of Discipline, by Family Size, Sex and Social Class of Seventh Grade Youths*[a]

SEX	SOCIAL CLASS	SIZE OF FAMILY	N	PHYSICAL DISCIPLINE[b] USED AT LEAST ONCE IN A WHILE		NEGATIVE VERBAL[c] METHODS USED AT LEAST ONCE IN A WHILE		SYMBOLIC REWARDS[d] USED FREQUENTLY OR MORE OFTEN	
				% MOTHER	% FATHER	% MOTHER	% FATHER	% MOTHER	% FATHER
BOYS	MC	1–2	130	43	31	32	26	43	43
		3	90	30	37	29	27	36	32
		4 or more	74	42	50	40	35	36	26
		dyx	—	—.007	+.121	+.038	+.053	—.054	—.121
	LC	1–2	134	40	45	41	37	37	28
		3	93	42	36	27	36	33	29
		4 or more	105	43	51	39	34	30	26
		dyx	—	+.020	+.041	—.024	—.023	—.049	—.006
GIRLS	MC	1–2	122	18	18	30	21	62	55
		3	98	26	16	26	25	63	56
		4 or more	67	27	23	26	20	43	43
		dyx	—	+.070	+.021	—.029	—.008	—.099	—.064
	LC	1–2	127	22	16	26	26	47	47
		3	107	38	31	36	35	47	37
		4 or more	114	44	38	33	31	32	24
		dyx	—	+.199	+.156	+.052	+.040	—.104	—.159

[a]Note that the predicted direction of the relation between family size and symbolic rewards is negative.

[b]Frequency of physical punishment was obtained by asking: "How often does your (mother/father) discipline or punish you by spanking, slapping, or striking you?" (1) very often, (2) frequently, (3) once in a while, (4) very seldom, and (5) never.

[c]Frequency of negative verbal methods was obtained by asking: "How often does your (mother/father) discipline or punish you by nagging, yelling, scolding, criticizing, or making fun of you?" (1) very often, (2) frequently, (3) once in a while, (4) very seldom, and (5) never.

[d]Frequency of symbolic reward was obtained by asking: "How often does your (mother/father) ever give you praise, encouragement, or approval for what you do?" (1) very often, (2) frequently, (3) once in a while, (4) very seldom, and (5) never.

physical disciplining of middle-class girls, particularly by fathers. As for boys, the effect of family size on the frequency of physical discipline by father is greatest among those in middle-class families.

Data on the use of scoldings and criticism show relatively little variation by family size except for small differences for middle-class boys and lower-class girls.

Verbal rewards of one kind or another are consistently reported less often as family size increases. This finding parallels the results obtained by several studies of the effects of size on the emotional dimension of group life.[28] Primary attachments are less possible as the group gains in size, while problems of regulation, control, and task achievement come to the fore. Evidence of a similar process in our sample is seen in the tendency for various forms of external control to increase as family size increases.

Up to this point, our analysis has generally confirmed three of the six hypotheses presented earlier—one pertaining to the involvement of father in child rearing, and two concerning the prevalence of external control methods—and by controlling sex and social class, we specified conditions under which these expectations were most likely to be confirmed. Note, however, that the relations observed between family size and the various dependent variables are surprisingly weak. We shall comment on this outcome in our concluding discussion. Let us briefly review some of the results obtained up to this point.

Fathers in large families are generally more apt to be active in child rearing than are fathers of fewer children. The major exceptions are lower-class fathers of boys. These fathers are slightly *less apt* to assume disciplinary responsibilities in the large family. Lower-class girls, on the other hand, are *more likely* to be disciplined by father in the large rather than small family.

While the father generally tends to take a more active role in child rearing

[28]A. Paul Hare, *op. cit.*, p. 227.

as the demands of a large family require it, we have observed that as family size increases, middle-class parents of boys and lower-class parents of girls are more likely than other parents to be autocratic or authoritarian, to maintain a similar degree of control over the adolescent over a period of time, to explain their rules infrequently, to seldom express praise, encouragement and approval in response to good behavior, and to use physical discipline and negative verbal methods. In short, *parental behavior-control orientation is most strongly related to family size among middle-class families for boys and among lower-class families for girls.*

Since all indications are that lower-class girls experience more restraint, paternal direction, and punitive discipline than lower-class boys, in large as well as small families, it seems likely that family size and frequency of external control are most strongly associated in families with only one daughter. In what follows, we examine briefly the extent to which sex composition influences paternal involvement and behavior-control strategy in large and small families.

Sex Composition Effects

If the behavior of boys is perceived by peers, teachers and parents as different in many aspects from the behavior of girls, it is probable that parents rear a son in an "all male" family quite differently than they would if he had sisters. They no doubt tend to be more rigorous in setting behavior limits. Likewise, we suspect that one boy in an otherwise "all female" family tends to alter the way his parents rear his sisters. Since bossiness, assertiveness, hyperactivity, and quarrelsomeness appear to be characteristics more typical of boys than girls, it follows that if the activities of adolescents are to be kept under a reasonable degree of control, paternal involvement in child rearing should increase more or less directly as the proportion of male children in the family increases. The presence of a male child in the family should also induce a high rate of paternal participation because of the requirements of sex-role socialization. For these reasons, we should expect a father to take a more active role in rearing a child when he has one or more sons.

Here we are focusing on the social system requirements of the family in regard to paternal involvement. Obviously, fathers may take an active part in child rearing for many other reasons. Our expectations were formalized in hypotheses 2 and 4, summarized as follows: *Fathers are most likely to be active in rearing boys when the family is large and includes only male offspring, and in rearing girls when the family is large and includes at least one boy. An external control orientation is similarly most likely to prevail in families with male offspring.*

If father tends to assume a more active role in rearing children in families that include one or more boys, then we would expect fathers to be more likely to be perceived as making final decisions in regard to boys who have brothers and in regard to girls who have at least one brother. The utilization of external controls is most apt to be manifested in two ways (according to the data we have examined thus far): autocratic or authoritarian parental control and physical methods of discipline.

Possible variations in sex-composition effects by family size and social class are complex and thus difficult to predict. The results obtained up to this point suggest, however, that our predictions concerning girls and boys in mixed-sex families are most likely to hold for lower-class girls and middle-class boys in large families. For the purposes of this analysis, we shall assess sex composition effects only in families of two or more children.

Our data on paternal involvement in rearing boys and girls in same-sex and mixed-sex families of large and small sizes support our predictions only in the large family. Boys from large families are somewhat more likely to perceive father as dominant in making decisions on behavior rules and discipline when they have siblings only of the same sex. For girls, paternal involvement is slightly more common in mixed than in same-sex fam-

ilies. The percentage differences in these comparisons are extremely small and worth noting only as differences in the expected direction.

The data on family-size effects suggest that the involvement of middle-class fathers should respond differently than that of lower-class fathers to the number of sons and daughters in the family. With social class controlled, several meaningful variations in the previous results appear. First, we find that paternal dominance in deciding on rule and discipline policy for boys is practically unrelated to sex composition in the lower-class family but is strongly related to sex composition in large middle-class families. Differences in the small middle-class family are small and contrary to our predictions.

Second, comparing social class differences in paternal control, we find that middle-class girls are slightly more apt to perceive father as the authority figure when they have no brothers, while the reverse is true of lower-class girls. The difference is 5.8 per cent for the small family and –8.7 per cent for the large family. Thus, *lower-class girls in large families are even more likely to be under the direction of their fathers when they have brothers.* A corresponding set of comparisons on rule policy shows essentially no class variation.

In conclusion, we find that social class specifies the conditions under which differences in paternal activity in child rearing are greatest and least. As hypothesized, sex composition affects paternal involvement most for boys in large middle-class families and girls in large lower-class families. For the most part, the data on parental roles in making discipline policy show less sharp and consistent differences than the results on parental roles in establishing rules of conduct. One possible explanation for this is that mother is more likely to discipline boys *and* girls of this age than is father.[29]

Known social class differences in paternal influence and in the socialization of boys and girls are relevant to these results. Research has indicated that fathers are less likely to exert leadership in the lower-class family than in the middle-class family.[30] A recent study reports class differences in the control parents exercise over their daughters relative to their sons, with lower-class mothers and especially fathers tending to be more controlling and generally more restrictive than middle-class parents.[31]

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Our data on behavior control support our predictions most consistently in the large family. Both mother and father are much more likely to be highly controlling of daughter's behavior if she has one or more brothers. No comparable differences exist for parent-son decision making.

Sex composition has the greatest effect on maternal control in the large lower-class family. For instance, boys with brothers rather than boys with sisters are more likely to report that mothers are dominant in the large rather than in the small family. (The family-size percentage differences are 3.8 for boys with sisters and 10.5 for boys with brothers.) Girls with at least one brother as against those with sisters are also more likely to describe mother as dominant in the large rather than small family. (The family-size percentage differences are 18.2 and –7.1.) In such a context behavior control needs are great, female respectability within the family is valued, and "obedience" values are salient.

Similar results appear for paternal control of girls with social class controlled, while no variations are evident among boys. The number of boys in the family seems to have little effect on the degree of control fathers exercise over their sons' behavior. In sharp contrast with this outcome is the –25.1 percentage difference between lower-class girls with autocratic or authoritarian fathers and no brothers, and those with brothers. *Lower-class girls who have brothers are*

[29]Melvin Kohn and Eleanor Carroll, *op. cit.*, pp. 372–392, and Bowerman and Elder, *op. cit.*

[30]Bowerman and Elder, *op. cit.* and Robert O. Blood and Donald M. Wolfe, *Husbands and Wives*, New York: The Free Press of Glencoe, 1960.

[31]Glen H. Elder, Jr., "Structural Variations in the Child Rearing Relationship," *op. cit.*, p. 248.

more than twice as likely to report father as autocratic or authoritarian as are girls in "all girl" families. Much smaller differences, though in the same direction, appear in similar comparisons of middle-class girls and their families.

Sex-composition effects on the use of physical punishment, by and large, follow a pattern similar to that described above. All of the percentage differences are in the direction predicted and are greater among girls than among boys. Large percentage differences on parental discipline appear only among youth from large lower-class families. Girls with brothers and no sisters are more likely than girls with sisters to report that father or mother occasionally uses physical punishment. Among boys, the strongest effect is likewise manifested in large families, but in those of middle-class status. Both findings are in the expected direction. Clearly, sex composition has little effect on parental role patterns in the small family, and this minimal effect is especially evident in policymaking pertaining to the rearing of boys.

Turning to the effects of sex composition on the use of *behavior control techniques,* the two outstanding results pertain to the large lower-class family. Without question, the strongest effect of sex composition is manifested in the rearing of girls in this type of family. Girls from large families with one or more brothers are much more likely than girls without brothers to report that their parents are autocratic or authoritarian in behavior control and use physical punishment at least "once in a while." Boys from "all male" families are much more apt than boys with sisters to perceive mother as dominant, and to report that both mother and father occasionally use physical punishment.

Discussion

Family-size and sex-composition effects on paternal involvement in child rearing and on child-rearing methods are heavily contingent on the sex of the child and on his family's class status. Generally, family size affects paternal involvement most strongly among middle-class boys and lower-class girls. Sex-composition effects are greatest in the rearing of girls in large lower-class families. As family size increases, these girls are more likely to perceive father as prominent in making child-rearing decisions, to see parents as less communicative and more controlling, and to report that parents use physical punishment occasionally and praise infrequently. These tendencies are stronger when there are one or more boys in the family. Family size and sex composition apparently have less effect on the rearing of middle-class girls.

Among middle-class boys, the likelihood of paternal dominance in child-rearing matters, paternal stability of control, incommunicativeness, and the father's occasional use of physical punishment increases as family size increases. The sex composition of the family appears to have little effect on child-rearing in these families regardless of the number of children. Although fathers are more likely to be dominant in large families, the number of boys in the family seems to make no difference in child rearing.

The picture changes markedly among lower-class boys and their families. Although behavior control techniques of an external nature are for the most part not affected by size of family, external control techniques are used more frequently in the large family *when all children in the family are boys.* In such cases, lower-class fathers are much more apt to control their sons' activities firmly as well as to punish them physically when they disobey.

A number of factors might account for the sharp variations in family-size and sex-composition effects by social class. First of all, middle- and lower-class parents have different goals. As Kohn and Carroll point out, "to middle-class parents, it is of primary importance that a child be able to decide for himself how to act, and that he have personal resources to act on these decisions—to working-class parents, on the other hand, it is of primary importance that the child act reputably, that he not transgress proper

rules."[32] Our data lend plausibility to this description. Practices that encourage the child to understand and adopt rules of conduct and to develop the ability to govern himself accordingly are more commonly used by middle-class parents. Methods such as physical punishment, which inhibit self-reliance and which curtail disapproval behavior without facilitating the learning of parental values and norms, tend to be favored more by parents of lower-class status.

Another factor may be differential socialization of girls by middle- and lower-class parents. We suggest that lower-class parents are more concerned about maintaining their daughters' respectability than about delegating much responsibility to them. This orientation is reinforced and made more imperative in a large family composed of both boys and girls. A morality concern is less relevant to the masculine interests of boys and hence may partially explain why family size has a greater effect on the rearing of lower-class girls. The greater likelihood of paternal involvement in making policy decisions concerning girls in lower-class families may be similarly explained. Lower-class fathers with an interest in their daughters' welfare may be persuaded to assume a more active role in controlling their daughters' experiences in peer relationships.

In a recent study of the correlates of adolescent leadership and responsibility, Bronfenbrenner found that boys who received insufficient discipline and love in the home were least likely to receive high ratings on leadership and responsibility in school, while girls who were over-controlled in the home were unlikely to receive favorable ratings on either dimension.[33] This is particularly suggestive when we consider the attitudes and responsibilities of lower-class girls in large families. Since parental control and punitive discipline are most common in this type of family, these girls may feel rebellious toward adult authority.[34] This type of home may, in fact, produce daughters who are anything but obedient and responsible. Greater paternal activity in handling disciplinary problems is another factor that may encourage this tendency; Bronfenbrenner notes that adolescents seemed to be more dependable when the same-sex parent was principal disciplinarian. Restrictive and punitive control on girls in large lower-class families may, when combined with their relatively small chances of social advancement by means of education beyond high school, encourage early departure from school, early entry into the labor market, and early marriage as available means of escape.

Family structure and child-rearing patterns: the effect of family size and sex composition

One of the more important results of this study is that neither family size nor sex composition explains even a moderately large portion of the variation in the perceived parental behaviors we have examined in this paper.[35] The effects they do have are highly contingent upon the sex and social class of the child.

It is quite possible that family size has its greatest effect on the rearing of pre-school children. When a majority of the children in a large family are not of school age, the caretaking and training

[32]Kohn and Carroll, *op. cit.*

[33]Urie Bronfenbrenner, "Some Familial Antecedents of Responsibility and Leadership in Adolescents" in Luigi Petrullo and Bernard Bass (eds.), *Leadership and Interpersonal Behavior,* New York: Rinehart, Holt and Winston, 1961, pp. 239–271.

[34]Nye found that adolescents have better relations with their parents in small than in large families. Ivan Nye, "Adolescent-Parent Adjustment: Age, Sex, Sibling, Number, Broken Homes and Employed Mothers as Variables," *Marriage and Family Living,* 14 (November, 1952) pp. 327–332.

[35]The relatively weak effects of family size are puzzling when we note that measured intelligence, achievement motivation, and educational aspirations of youth tend to be appreciably lower among youth from large families, particularly those of lower-class status. Earlier research on the educational and occupational goals of adolescents indicated that family-size effects on the goal-orientations of parents and adolescents are stronger, especially among lower-class families. See Glen H. Elder, Jr., *Adolescent Achievement and Mobility Aspirations,* Chapel Hill: Institute for Research in Social Science, 1962, Ch. 3. For an analysis of the relation between family size and measured intelligence see John Nisbet, "Family Environment and Intelligence" in *Education, Economy,* and *Society,* A. H. Halsey, Jean Floud, and C. Arnold Anderson (eds.), New York: The Free Press of Glencoe, 1961, pp. 273–287. On family size in relation to achievement motivation see Bernard C. Rosen, "Family Structure and Achievement Motivation," *American Sociological Review,* 26 (August, 1961), pp. 574–585.

problems facing mother are most pressing. In their Boston study, Sears, Maccoby and Levin explored some of the child-rearing correlates of birth order and family size; however, their analysis was severely limited by the size of their sample.[36] Their data indicate that mothers were apt to be more restrictive in large families. Since a large number of children is generally more common among low-income families, further research on the effects of family size is likely to enhance our understanding of the culturally deprived child.

[36]Robert R. Sears, Eleanor E. Maccoby, and Harry Levin, *Patterns of Child Rearing,* Evanston, Ill.: Row-Peterson, 1957, pp. 407–419.

THE SPLIT-LEVEL AMERICAN FAMILY

URIE BRONFENBRENNER

Children used to be brought up by their parents.

It may seem presumptuous to put that statement in the past tense. Yet it belongs to the past. Why? Because *de facto* responsibility for upbringing has shifted away from the family to other settings in the society, where the task is not always recognized or accepted. While the family still has the primary moral and legal responsibility for developing character in children, the power or opportunity to do the job is often lacking in the home, primarily because parents and children no longer spend enough time together in those situations in which such training is possible. This is not because parents don't want to spend time with their children. It is simply that conditions of life have changed.

From Urie Bronfenbrenner, "The Split-Level American Family," *Saturday Review,* October 7, 1967. Reprinted by permission of the author and Saturday Review, Inc.

To begin with, families used to be bigger—not in terms of more children so much as more adults—grandparents, uncles, aunts, cousins. Those relatives who didn't live with you lived nearby. You often went to their houses. They came as often to yours, and stayed for dinner. You knew them all—the old folks, the middle-aged, the older cousins. And they knew you. This had its good side and its bad side.

On the good side, some of these relatives were interesting people, or so you thought at the time. Uncle Charlie had been to China. Aunt Sue made the best penuche fudge on the block. Cousin Bill could read people's minds (according to him). And all these relatives gave you Christmas presents.

But there was the other side. You had to give Christmas presents to all your relatives. And they all minded your business throughout the years. They wanted to know where you had been, where you were going, and why. If they didn't like your answers, they said so (particularly if you had told them the truth).

Not just your relatives minded your business. Everybody in the neighborhood did. Again this had its two sides.

If you walked on the railroad trestle, the phone would ring at your house. Your parents would know what you had done before you got back home. People on the street would tell you to button your jacket, and ask why you weren't in church last Sunday.

But you also had the run of the neighborhood. You were allowed to play in the park. You could go into any store, whether you bought anything or not. They would let you go back of the store to watch them unpack the cartons and to

hope that a carton would break. At the lumber yard, they let you pick up good scraps of wood. At the newspaper office, you could punch the linotype and burn your hand on the slugs of hot lead. And at the railroad station (they had railroad stations then), you could press the telegraph key and know that the telegraphers heard your dit-dah-dah all the way to Chicago.

These memories of a gone boyhood have been documented systematically in the research of Professor Herbert Wright and his associates at the University of Kansas. The Midwestern investigators have compared the daily life of children growing up in a small town with the lives of children living in a modern city or suburb. The contrast is sobering. Children in a small town get to know well a substantially greater number of adults in different walks of life and, in contrast to their urban and suburban agemates, are more likely to be active participants in the adult settings that they enter.

As the stable world of the small town has become absorbed into an ever-shifting suburbia, children are growing up in a different kind of environment. Urbanization has reduced the extended family to a nuclear one with only two adults, and the functioning neighborhood—where it has not decayed into an urban or rural slum—has withered to a small circle of friends, most of them accessible only by motor car or telephone. Whereas the world in which the child lived before consisted of a diversity of people in a diversity of settings, now for millions of American children the neighborhood is nothing but row upon row of buildings inhabited by strangers. One house, or apartment, is much like another, and so are the people. They all have about the same income, and the same way of life. And the child doesn't even see much of that, for all the adults in the neighborhood do is come home, have a drink, eat dinner, mow the lawn, watch TV, and sleep. Increasingly often, today's housing projects have no stores, no shops, no services, no adults at work or play. This is the sterile world in which many of our children grow, the "urban renewal" we offer to the families we would rescue from the slums.

The split-level American family

Neighborhood experiences available to children are extremely limited nowadays. To do anything at all—go to a movie, get an ice cream cone, go swimming, or play ball—they have to travel by bus or private car. Rarely can a child watch adults working at their trades. Mechanics, tailors, or shopkeepers are either out of sight or unapproachable. A child cannot listen to gossip at the post office as he once did. And there are no abandoned houses, barns, or attics to break into. From a young point of view, it's a dull world.

Hardly any of this really matters, for children aren't home much, anyway. A child leaves the house early in the day, on a schoolbound bus, and it's almost suppertime when he gets back. There may not be anybody home when he gets there. If his mother isn't working, at least part-time (more than a third of all mothers are), she's out a lot—because of social obligations, not just friends—doing things for the community. The child's father leaves home in the morning before the child does. It takes the father an hour and a half to get to work. He's often away weekends, not to mention absences during the week.

If a child is not with his parents or other adults, with whom does he spend his time? With other kids, of course—in school, after school, over weekends, on holidays. In these relationships, he is further restricted to children of his own age and the same socioeconomic background. The pattern was set when the old neighborhood school was abandoned as inefficient. Consolidated schools brought homogeneous grouping by age, and the homogenizing process more recently has been extended to segregate children by levels of ability; consequently, from the preschool years onward the child is dealing principally with replicas of the stamp of his own environment. Whereas social invitations used to be extended to entire families on a neighborhood basis, the

cocktail party of nowadays has its segregated equivalent for every age group down to the toddlers.

It doesn't take the children very long to learn the lesson adults teach: Latch onto your peers. But to latch he must contend with a practical problem. He must hitch a ride. Anyone going in the right direction can take him. But if no one is going in that direction just then, the child can't get there.

The child who can't go somewhere else stays home, and does what everybody else does at home. He watches TV. Studies indicate that American youngsters see more TV than children in any other country do. By the late 1950s, the TV-watching figure had risen to two hours a day for the average five-year-old, three hours a day during the watching peak age period of twelve to fourteen years.

In short, whereas American children used to spend much of their time with parents and other grownups, more and more waking hours are now lived in the world of peers and of the television screen.

What do we know about the influence of the peer group, or of television, on the lives of young children? Not much.

The prevailing view in American society (indeed in the West generally) holds that the child's psychological development, to the extent that it is susceptible to environmental influence, is determined almost entirely by the parents and within the first six years of life. Scientific investigators—who are, of course, products of their own culture, imbued with its tacit assumptions about human nature—have acted accordingly. Western studies of influences on personality development in childhood overwhelmingly take the form of research on parent-child relations, with the peer group, or other extraparental influences, scarcely being considered.

In other cultures, this is not always so. A year ago, at the International Congress of Psychology in Moscow, it was my privilege to chair a symposium on "Social Factors in Personality Development." Of a score of papers presented, about half were from the West (mostly American) and half from the Socialist countries (mostly Russian). Virtually without exception, the Western reports dealt with parent-child relationships; those from the Soviet Union and other East European countries focused equally exclusively on the influence of the peer group, or, as they call it, the children's collective.

Some relevant studies have been carried out in our own society. For example, I, with others, have done research on a sample of American adolescents from middle-class families. We have found that children who reported their parents away from home for long periods of time rated significantly lower on such characteristics as responsibility and leadership. Perhaps because it was more pronounced, absence of the father was more critical than that of the mother, particularly in its effect on boys. Similar results have been reported in studies of the effects of father absence among soldiers' families during World War II, in homes of Norwegian sailors and whalers, and in Negro households with missing fathers, both in the West Indies and the United States. In general, father absence contributes to low motivation for achievement, inability to defer immediate for later gratification, low self-esteem, susceptibility to group influence, and juvenile delinquency. All of these effects are much more marked for boys than for girls.

The fact that father-absence increases susceptibility to group influence leads us directly to the question of the impact of the peer group on the child's attitudes and behavior. The first—and as yet the only—comprehensive research on this question was carried out by two University of North Carolina sociologists, Charles Bowerman and John Kinch, in 1959. Working with a sample of several hundred students from the fourth to the tenth grades in the Seattle school system, these investigators studied age trends in the tendency of children to turn to parents versus peers for opinion, advice, or company in various activities. In general, there was a turning point at about the seventh grade. Before that, the majority looked mainly to their parents as models, com-

panions, and guides to behavior; thereafter, the children's peers had equal or greater influence.

Though I can cite no documentation from similar investigations since then, I suspect the shift comes earlier now, and is more pronounced.

In the early 1960s, the power of the peer group was documented even more dramatically by James Coleman in his book *The Adolescent Society*. Coleman investigated the values and behaviors of teen-agers in eight large American high schools. He reported that the aspirations and actions of American adolescents were primarily determined by the "leading crowd" in the school society. For boys in this leading crowd, the hallmark of success was glory in athletics; for girls, it was the popular date.

Intellectual achievement was, at best, a secondary value. The most intellectually able students were not those getting the best grades. The classroom wasn't where the action was. The students who did well were "not really those of highest intelligence, but only the ones who were willing to work hard at a relatively unrewarded activity."

The most comprehensive study relevant to the subject of our concern here was completed only a year ago by the same James Coleman. The data were obtained from more than 600,000 children in grades one to twelve in 4,000 schools carefully selected as representative of public education in the United States. An attempt was made to assess the relative contribution to the child's intellectual development (as measured by standardized intelligence and achievement tests) of the following factors: 1) family background (e.g., parents' education, family size, presence in the home of reading materials, records, etc.); 2) school characteristics (e.g., per pupil expenditure, classroom size, laboratory and library facilities, etc.); 3) teacher characteristics (e.g., background, training, years of experience, verbal skills, etc.); and 4) characteristics of other children in the same school (e.g., their background, academic achievement, career plans, etc.).

Of the many findings of the study, two were particularly impressive; the first was entirely expected, the second somewhat surprising. The expected finding was that home background was the most important element in determining how well the child did at school, more important than any of all aspects of the school which the child attended. This generalization, while especially true for Northern whites, applied to a lesser degree to Southern whites and Northern Negroes, and was actually reversed for Southern Negroes, for whom the characteristics of the school were more important than those of the home. The child apparently drew sustenance from wherever sustenance was most available. Where the home had most to offer, the home was the most determining; but where the school could provide more stimulation than the home, the school was the more influential factor.

The second major conclusion concerned the aspects of the school environment which contributed most to the child's intellectual achievement. Surprisingly enough, such items as per pupil expenditure, number of children per class, laboratory space, number of volumes in the school library, and the presence or absence of ability grouping were of negligible significance. Teacher qualifications accounted for some of the child's achievement. But by far the most important factor was the pattern of characteristics of the other children attending the same school. Specifically, if a lower-class child had schoolmates who came from advantaged homes, he did reasonably well; but if all the other children also came from deprived backgrounds, he did poorly.

What about the other side of the story? What happens to a middle-class child in a predominantly lower-class school? Is he pulled down by his classmates? According to Coleman's data, the answer is no; the performance of the advantaged children remains unaffected. It is as though good home background had immunized them against the possibility of contagion.

This is the picture so far as academic

achievement is concerned. How about other aspects of psychological development? Specifically, how about social behavior—such qualities as responsibility, consideration for others, or, at the opposite pole, aggressiveness or delinquent behavior? How are these affected by the child's peer group?

The Coleman study obtained no data on this score. Some light has been shed on the problem, however, by an experiment which my Cornell colleagues and I recently carried out with school children in the United States and in the Soviet Union. Working with a sample of more than 150 sixth-graders (from six classrooms) in each country, we placed the children in situations in which we could test their readiness to engage in morally disapproved behavior such as cheating on a test, denying responsibility for property damage, etc. The results indicated that American children were far more ready to take part in such actions.

The effect of the peer group (friends in school) was quite different in the two societies. When told that their friends would know of their actions, American children were even more willing to engage in misconduct. Soviet youngsters showed just the opposite tendency. In their case, the peer group operated to support the values of the adult society, at least at their age level.

We believe these contrasting results are explained in part by the differing role of the peer group in the two societies. In the Soviet Union, *vospitanie,* or character development, is regarded as an integral part of the process of education, and its principal agent—even more important than the family—is the child's collective in school and out. A major goal of the Soviet educational process, beginning in the nursery, is "to forge a healthy, self-sufficient collective" which, in turn, has the task of developing the child into a responsible, altruistic, and loyal member of a socialist society. In contrast, in the United States, the peer group is often an autonomous agent relatively free from adult control and uncommitted—if not outrightly opposed—to the values and codes of conduct approved by society at large. Witness the new phenomenon of American middle-class vandalism and juvenile delinquency, with crime rates increasing rapidly not only for teen-agers but for younger children as well.

How early in life are children susceptible to the effects of contagion? Professor Albert Bandura and his colleagues at Stanford University have conducted some experiments which suggest that the process is well developed at the preschool level. The basic experimental design involves the following elements. The child finds himself in a familiar playroom. As if by chance, in another corner of the room a person is playing with toys. Sometimes this person is an adult (teacher), sometimes another child. This other person behaves very aggressively. He strikes a large Bobo doll (a bouncing inflated figure), throws objects, and mutilates dolls and animal toys, with appropriate language to match. Later on, the experimental subject (*i.e.,* the child who "accidentally" observed the aggressive behavior) is tested by being allowed to play in a room containing a variety of toys, including some similar to those employed by the aggressive model. With no provocation, perfectly normal, well-adjusted preschoolers engage in aggressive acts, not only repeating what they had observed but elaborating on it. Moreover, the words and gestures accompanying the actions leave no doubt that the child is living through an emotional experience of aggressive expression.

It is inconvenient to use a live model every time. Thus it occurred to Bandura to make a film. In fact, he made two, one with a live model and a second film of a cartoon cat that said and did everything the live model had said and done. The films were presented on a TV set left on in a corner of the room, as if by accident. When the children were tested, the TV film turned out to be just as effective as real people. The cat aroused as much aggression as the human model.

As soon as Bandura's work was published, the television industry issued a statement calling his conclusions into

question on the interesting ground that the children had been studied "in a highly artificial situation," since no parents were present either when the TV was on or when the aggressive behavior was observed. "What a child will do under normal conditions cannot be projected from his behavior when he is carefully isolated from normal conditions and the influences of society," the statement declared. Bandura was also criticized for using a Bobo doll (which, the TV people said, is "made to be struck") and for failing to follow up his subjects after they left the laboratory. Since then, Bandura has shown that only a ten-minute exposure to an aggressive model still differentiates children in the experimental group from their controls (children not subjected to the experiment) six months later.

Evidence for the relevance of Bandura's laboratory findings to "real life" comes from a subsequent field study by Dr. Leonard Eron, now at the University of Iowa. In a sample of more than 600 third-graders, Dr. Eron found that the children who were rated most aggressive by their classmates were those who watched TV programs involving a high degree of violence.

At what age do people become immune from contagion to violence on the screen? Professor Richard Walters of Waterloo University in Canada, and his associate, Dr. Llewellyn Thomas, showed two movie films to a group of thirty-four-year-old hospital attendants. Half of these adults were shown a knife fight between two teen-agers from the picture, *Rebel Without a Cause;* the other half saw a film depicting adolescents engaged in art work. Subsequently, all the attendants were asked to assist in carrying out an experiment on the effects of punishment in learning.

In the experiment, the attendants gave an unseen subject an electric shock every time the subject made an error. The lever for giving shocks had settings from zero to ten. To be sure the assistant understood what the shocks were like, he was given several, not exceeding the level of four, before the experiment. Since nothing was said about the level of shocks to be administered, each assistant was left to make his own choice. The hospital attendants who had seen the knife-fight film gave significantly more severe shocks than those who had seen the art-work film. The same experiment was repeated with a group of twenty-year-old females. This time the sound track was turned off so that only visual cues were present. But neither the silence nor the difference in sex weakened the effect. The young women who had seen the aggressive film administered more painful shocks.

These results led designers of the experiment to wonder what would happen if no film were shown and no other deliberate incitement were introduced in the immediate setting of the experiment. Would the continuing emotional pressures of the everyday environment of adolescents—who see more movies and more TV and are called on to display virility through aggressive acts in teen-age gangs—provoke latent brutality comparable to that exhibited by the older people under direct stimulation of the movie of the knife fight?

Fifteen-year-old high school boys were used to test the answer to this question. Without the suggestive power of the aggressive film to step up their feelings, they pulled the shock lever to its highest intensities (levels eight to ten). A few of the boys made such remarks as "I bet I made that fellow jump."

Finally, utilizing a similar technique in a variant of what has come to be known as the "Eichmann experiment," Professor Stanley Milgram, then at Yale University, set up a situation in which the level of shock to be administered was determined by the lowest level proposed by any one of three "assistants," two of whom were confederates of Milgram and were instructed to call for increasingly higher shocks. Even though the true subjects (all adult males) could have kept the intensity to a minimum simply by stipulating mild shocks, they responded to the confederates' needling and increased the degree of pain they administered.

All of these experiments point to

one conclusion. At all age levels, pressure from peers to engage in aggressive behavior is extremely difficult to resist, at least in American society.

Now if the peer group can propel its members into antisocial acts, what about the opposite possibility? Can peers also be a force for inducing constructive behavior?

Evidence on this point is not so plentiful, but some relevant data exist. To begin with, experiments on conformity to group pressure have shown that the presence of a single dissenter—for example, one "assistant" who refuses to give a severe shock—can be enough to break the spell so that the subject no longer follows the majority. But the only research explicitly directed at producing moral conduct as a function of group experience is a study conducted by Muzafer Sherif and his colleagues at the University of Oklahoma and known as the "Robber's Cave Experiment." In the words of Elton B. McNeil:

> War was declared at Robber's Cave, Oklahoma, in the summer of 1954 (Sherif *et al.*, 1961). Of course, if you have seen one war you have seen them all, but this was an interesting war, as wars go, because only the observers knew what the fighting was about. How, then, did this war differ from any other war? This one was caused, conducted, and concluded by behavioral scientists. After years of religious, political, and economic wars, this was, perhaps, the first scientific war. It wasn't the kind of war that an adventurer could join just for the thrill of it. To be eligible, ideally, you had to be an eleven-year-old, middle-class, American, Protestant, well-adjusted boy who was willing to go to an experimental camp.

Sherif and his associates wanted to demonstrate that within the space of a few weeks they could produce two contrasting patterns of behavior in this group of normal children. First, they could bring the group to a state of intense hostility, and then completely reverse the process by inducing a spirit of warm friendship and active cooperation. The success of their efforts can be gauged by the following two excerpts describing the behavior of the boys after each stage had been reached. After the first experimental treatment of the situation was introduced . . .

> good feeling soon evaporated. The members of each group began to call their rivals "stinkers," "sneaks," and "cheaters." They refused to have anything more to do with individuals in the opposing group. The boys . . . turned against buddies whom they had chosen as 'best friends' when they first arrived at the camp. A large proportion of the boys in each group gave negative ratings to all the boys in the other. The rival groups made threatening posters and planned raids, collecting secret hoards of green apples for ammunition. To the Robber's Cave came the Eagles, after a defeat in a tournament game, and burned a banner left behind by the Rattlers; the next morning the Rattlers seized the Eagles' flag when they arrived on the athletic field. From that time on name-calling, scuffles, and raids were the rule of the day.
>
> . . . In the dining-hall line they shoved each other aside, and the group that lost the contest for the head of the line shouted "Ladies first!" at the winner. They threw paper, food, and vile names at each other at the tables. An Eagle bumped by a Rattler was admonished by his fellow Eagles to brush "the dirt" off his clothes.

But after the second experimental treatment . . .

> . . . The members of the two groups began to feel more friendly to each other. For example, a Rattler whom the Eagles disliked for his sharp tongue and skill in defeating them became a "good egg." The boys stopped shoving in the meal line. They no longer called each other names, and sat together at the table. New friendships developed between individuals in the two groups.
>
> In the end the groups were actively seeking opportunities to mingle, to entertain and "treat" each other. They decided to hold a joint campfire. They took turns presenting skits and songs. Members of both groups requested that they go home together on the same bus, rather than on the separate buses in which they had come. On the way the bus stopped for refreshments.

> One group still had $5 which they had won as a prize in a contest. They decided to spend this sum on refreshments. On their own initiative they had invited their former rivals to be their guests for malted milks.

How were each of these effects acheived? Treatment One has a familiar ring:

> . . . To produce friction between the groups of boys we arranged a tournament of games: baseball, touch football, a tug-of-war, a treasure hunt, and so on. The tournament started in a spirit of good sportsmanship. But as the play progressed good feeling soon evaporated.

How does one turn hatred into harmony? Before undertaking this task, Sherif wanted to demonstrate that, contrary to the views of some students of human conflict, mere interaction—pleasant social contact between antagonists—would not reduce hostility.

> . . . we brought the hostile Rattlers and Eagles together for social events: going to the movies, eating in the same dining room, and so on. But far from reducing conflict, these situations only served as opportunities for the rival groups to berate and attack each other.

How was the conflict finally dispelled? By a series of strategems, of which the following is an example:

> . . . Water came to our camp in pipes from a tank about a mile away. We arranged to interrupt it and then called the boys together to inform them of the crisis. Both groups promptly volunteered to search the water line for trouble. They worked together harmoniously, and before the end of the afternoon they had located and corrected the difficulty.

On another occasion, just when everyone was hungry and the camp truck was about to go to town for food, it developed that the engine wouldn't start, and the boys had to pull together to get the vehicle going.

To move from practice to principle, the critical element for achieving harmony in human relations, according to Sherif, is joint activity in behalf of a *superordinate goal.* "Hostility gives way when groups pull together to achieve overriding goals which are real and compelling for all concerned."

Here, then, is the solution for the problems posed by autonomous peer groups and rising rates of juvenile delinquency: Confront the youngsters with some superordinate goals, and everything will turn out fine.

What superordinate goals can we suggest? Washing dishes and emptying wastebaskets? Isn't it true that meaningful opportunities for children no longer exist?

This writer disagrees. Challenging activities for children can still be found; but their discovery requires breaking down the prevailing patterns of segregation identified earlier in this essay— segregation not merely by race (although this is part of the story) but to an almost equal degree by age, class, and ability. I am arguing for greater involvement of adults in the lives of children and, conversely, for greater involvement of children in the problems and tasks of the larger society.

We must begin by desegregating age groups, ability groups, social classes, and once again engaging children and adults in common activities. Here, as in Negro-white relations, integration is not enough. In line with Sherif's findings, contact between children and adults, or between advantaged and disadvantaged, will not of itself reduce hostility and evoke mutual affection and respect. What is needed in addition is involvement in a superordinate goal, common participation in a challenging job to be done.

Where is a job to be found that can involve children and adults across the dividing lines of race, ability, and social class?

Here is one possibility. Urbanization and industrialization have not done away with the need to care for the very young. To be sure, "progress" has brought us to the point where we seem to believe that only a person with a master's degree is truly qualified to care for young children.

An exception is made for parents, and for babysitters, but these are concessions to practicality; we all know that professionals could do it better.

It is a strange doctrine. For if present-day knowledge of child development tells us anything at all, it tells us that the child develops psychologically as a function of reciprocal interaction with those who love him. This reciprocal interaction need be only of the most ordinary kind—caresses, looks, sounds, talking, singing, playing, reading stories—the things that parents, and everybody else, have done with children for generation after generation.

Contrary to the impression of many, our task in helping disadvantaged children through such programs as Head Start is not to have a "specialist" working with each child but to enable the child's parents, brothers, sisters, and all those around him to provide the kinds of stimulation which families ordinarily give children but which can fail to develop in the chaotic conditions of life in poverty. It is for this reason that Project Head Start places such heavy emphasis on the involvement of parents, not only in decision-making but in direct interaction with the children themselves, both at the center and (especially) at home. Not only parents but teen-agers and older children are viewed as especially significant in work with the very young, for, in certain respects, older siblings can function more effectively than adults. The latter, no matter how warm and helpful they may be, are in an important sense in a world apart; their abilities, skills, and standards are so clearly superior to those of the child as to appear beyond childish grasp.

Here, then, is a context in which adults and children can pursue together a superordinate goal, for there is nothing so "real and compelling to all concerned" as the need of a young child for the care and attention of his elders. The difficulty is that we have not yet provided the opportunities—the institutional settings—which would make possible the recognition and pursuit of this superordinate goal.

The beginnings of such an opportunity structure, however, already exist in our society. As I have indicated, they are to be found in the poverty program, particularly those aspects of it dealing with children: Head Start, which involves parents, older children, and the whole community in the care of the very young; Follow Through, which extends Head Start into the elementary grades, thus breaking down the destructive wall between the school on the one hand and parents in the local community on the other; Parent and Child Centers, which provide a neighborhood center where all generations can meet to engage in common activities in behalf of children, etc.

The need for such programs is not restricted to the nation's poor. So far as alienation of children is concerned, the world of the disadvantaged simply reflects in more severe form a social disease that has infected the entire society. The cure for the society as a whole is the same as that for its sickest segment. Head Start, Follow Through, Parent and Child Centers are all needed by the middle class as much as by the economically less favored. Again, contrary to popular impression, the principal purpose of these programs is not remedial education but the giving to both children and their families of a sense of dignity, purpose, and meaningful activity without which children cannot develop capacities in any sphere of activity, including the intellectual.

Service to the very young is not the only superordinate goal potentially available to children in our society. The very old also need to be saved. In segregating them in their own housing projects and, indeed, in whole communities, we have deprived both them and the younger generations of an essential human experience. We need to find ways in which children once again can assist and comfort old people, and, in return, gain insight to character development that occurs through such experiences.

Participation in constructive activities on behalf of others will also reduce the growing tendency to aggressive and antisocial behavior in the young, if only by diversion from such actions and from the stimuli that instigate them. But so long as these stimuli continue to dominate the TV screen, those exposed to TV can be expected to react to the influence. Nor, as we have seen, is it likely that the TV industry will be responsive to the findings of research or the arguments of concerned parents and professionals. The only measure that is likely to be effective is pressure where it hurts most. The sponsor must be informed that his product will be boycotted until programing is changed.

My proposals for child rearing in the future may appear to some as a pipe-dream, but they need not be a dream. For just as autonomy and aggression have their roots in the American tradition, so have neighborliness, civic concern, and devotion to the young. By re-exploring these last, we can rediscover our moral identity as a society and as a nation.

SUGGESTIONS FOR FURTHER READING

Ainsworth, M. D., "Patterns of Attachment Behavior Shown by the Infant in Interaction with His Mother," *Merrill-Palmer Quarterly,* Vol. 10 (1964), pp. 51–58. Concludes that the infant requires something more than sheer stimulation for the development of attachment behavior—that he needs somebody to respond to his own attachment overtures.

Borke, H., "A Family over Three Generations: The Transmission of Interacting and Relating Patterns," *Journal of Marriage and the Family,* Vol. 29, No. 4 (November 1967), pp. 638–671. Interviews with three generations of an upper-middle-class Protestant family were analyzed for perceptions of self and of others. Each family's interactions were observed in a structured task and at dinner. The variables found to be important for interactional patterns were ordinal position, husband-wife choice, cultural impact, and conscious and unconscious motives of individuals involved.

Minturn, L., and W. W. Lambert, *Mothers of Six Cultures* (New York: Wiley, 1964). This monograph is the second in a trilogy about mothers and children in six cultural settings—New England, Mexico, Philippines, Okinawa, India, and Kenya. Family size, living arrangements, household composition, and sex of the child proved to be critical determinants of the mothers' reported behaviors.

Reiss, I. L., "The Universality of the Family: A Conceptual Analysis," *Journal of Marriage and the Family,* Vol. 27, No. 4 (November 1965), pp. 443–453. George P. Murdock's conception of the universal aspects of the family is examined by reference to the ethnographic literature. A revised conception of the family is presented, interpreting the family as a small kinship group with the primary function of nurturing and socializing the infant.

Rodman, H., "Talcott Parsons' View of the Changing American Family," *Merrill-Palmer Quarterly,* Vol. 11, No. 3 (1965), pp. 229–237. A provocative article describing and analyzing the concepts about family life propounded by a well-known sociologist.

Rosen, B. C., "Family Structure and Value Transmission," *Merrill-Palmer Quarterly,* Vol. 10 (1964), pp. 1147–1153. Rosen interviewed preadolescent sons and their mothers to determine the similarity of their values relating to independence and achievement.

Sears, R. E., E. E. Maccoby, and H. Levin, *Patterns of Child Rearing* (Chicago: Row, Peterson, and Co., 1957). This classic on relationships between children's behaviors and patterns of child rearing is attractively written and contains much anecdotal material.

Sears, R. R., L. Rau, and R. Alpert, *Identification and Child Rearing* (Stanford, California: Stanford University Press, 1965). This book reports important studies of the child-rearing correlates of identification and the interrelation of measures of identification. This research is probably the most intensive investigation to date of preschool children and their parents.

Waters, E., and V. J. Crandall, "Social Class and Observed Maternal Behavior from 1940–1960," *Child Development,* Vol. 35 (1964), pp. 1197–1210. This article compared ratings of mothers made on the Fels Parent Scale in 1940 with ratings made on other parents in 1960. Patterns of maternal nurturance and coerciveness were related to the mother's social class.

Yarrow, L. J., "Research in Dimensions of Early Maternal Care," *Merrill-Palmer Quarterly*, Vol. 9, No. 2 (April 1963), pp. 101–114. Survey of research with a perceptive interpretation.

Radke-Yarrow, M., "Problems of Method in Parent-Child Research," *Child Development*, Vol. 34 (1963), pp. 215–226. Examines present methodologies and looks at possibilities for other research approaches.

8

THE CHILD'S SEX ROLE

Surprisingly, **social sex role**—the role that an individual plays as boy or girl, man or woman—received little attention from psychologists until the last two decades. For some time sociologists and **anthropologists** had been taking account of this variable. However, earlier psychologists were concerned with factors common to both sexes, such as human needs. The growing individual was commonly referred to as "the child," as though he were sexually neutral.

Just what caused the sudden interest in, and proliferation of, research in this area is unclear. Perhaps it was the very fact that research data, whenever separated according to sex, indicated it to be a highly significant variable. Although there was considerable overlapping between distributions, the sexes manifested significant differences in interests, attitudes, and personality characteristics. Females demonstrated more symptoms of **neuroticism** and instability, and males greater initiative and aggressiveness (Bernreuter, 1933). Also, statistics indicated that high achievement among women was relatively rare.

Simple logic suggests that sex role is of great significance for the child's development. Sex role defines the nature of much of his behavior, including his manner of dress and his play and work activities. It also defines areas of discrimination and privilege. Sally may have a football but Tommy may not have a doll. Tommy is permitted to slug it out with a chum, but Sally is immediately separated from Donna when the two threaten to fight. Let any skeptical reader simply review his activities for a typical day and then consider how those activities have been determined by his sex.

Sex role is especially significant where roles are highly polarized—that is, where the behaviors prescribed for each sex are strongly distinctive. Polarization of sex role often creates jealousies and hostilities. Sammy resents his father's protecting the sister who teases him. Molly feels put upon for having to do the dishes while brother Michael immediately returns to play. Often negative feelings are repressed, but take the form of unconscious antagonism toward members of the other sex. Cumulatively, they may become the stumbling block to happy marriage. The girl who is forced to sew or prepare snacks for her brothers may become the wife who belittles or ignores her husband.

Apparently, individuals differ greatly in the way they perceive their personal sex roles and behaviors (Hooker, 1963). One child may realize his parents would have preferred a child of the other sex and feel his own sex devalued. Another may have special characteristics that make his role hard to play. Often the boy who is a weakling is ill-fitted for the rough-and-tumble boy world. Unfortunately, we

lack adequate phenomenological studies concerned with how people feel about their sexuality and with the subjective consciousness of sex.

The origins of psychosexual differentiation have been neglected in research and hence cannot be fully specified. At least in the popular mind, sex-role differences are rooted in biology. Girls are said to be too fragile for football and too emotional for responsible leadership. Even in childhood, boys are awarded more responsible positions, such as the presidency of a class. Girls are believed to be more patient and warm than boys—hence, naturally more adept at tending baby brothers and sisters. In general, boys are compelled to be all-boy, but girls may be somewhat less girl than all-girl.

Among animals, at least, differential sex behaviors appear to be biologically based. Harlow (1962) found that male children of macaque monkeys make more threats toward other monkeys, boys or girls, than do female children. The girls' threats are reserved primarily for other girls. The male youngsters also initiate more contacts with playmates and engage in more rough-and-tumble play.

Among humans, the origin of psychosexual differences is less clear. Periods of the ovarian cycle have been found to relate to flightiness, irritability, and intraversion-extroversion (Benedek & Rubenstein, 1939). Also, females have a lower energy level than males and demonstrate less aggressiveness. Significantly, castrated males report reduced energy level and sexual responsiveness. However, it is doubtful that innate mechanisms predetermine psychosexual differentiation. Apparently, what happens before birth can be overridden to an extraordinary degree by postnatal events. In cases of hermaphrodites with identical diagnoses and anatomical defects, one child may simply be designated as a boy, the other as a girl (Money, 1963). In such cases, the differentiation of gender role and of psychosexual identity simply proceeds in agreement with the assigned sex, especially if the parents are convinced the assignment is correct. On the human level, at least, psychosexual differentiation can go completely contrary to one's physical sex.

The acquisition of gender role, concludes Money (1965), is the counterpart of **imprinting** in animals. By school age, he asserts, psychosexual differentiation is so complete that sex reassignment is out of the question, except in rare cases of ambiguous psychosexual differentiation. Sex-role discrimination usually begins during the second year and is definitely established by the age of three. Apparently, the critical period in the acquisition of gender role and psychosexual identity is approximately simultaneous with the establishment of native language.

In fact, almost all personality traits and behaviors typically associated with each sex seem to be socioculturally instead of biologically determined. In available research, correlations between masculinity scores and physical characteristics are mostly low and insignificant (Anastasi, 1958). Such correlations as are found seem largely the result of the social effects of visible physical characteristics, rather than of inherent biological factors. For instance, the male's larger size may contribute to his characteristically greater dominance—perhaps the only personality characteristic of clearly innate origin. However, aggression may account for greater male dominance, initiative, and achievement. This same factor helps explain the female's auxiliary position and the male's stronger ego. This factor alone would tend to polarize the positions of male and female in a host of activities.

Among the most important processes in determining sex role are **reinforcement**, **canalization**, identification, and system of child-rearing. Reinforcement connotes habituating or eliminating a behavior through reward or punishment. The boy's sex role is positively reinforced when his father praises his skill at boxing. The girl's role is negatively reinforced when her mother punishes her for "roughing up" a pal. Canalization simply means setting the stage in such a manner as to produce the desired behaviors. From birth

children are differentially treated and exposed to manifold sex-related symbols, including different clothing and hair styles for the sexes and distinctive behaviors of father and mother in the home (Hartley, 1964; Kagan, 1964).

Whether identification with the like-sex parent is required for proper sex-role acquisition is a matter of debate. Mussen and Distler (1959) believe it is crucial; however, Angrilli (1960) found no special relationship between the child's sex-role identification and weak or strong parent-identification. Some research indicates that (at least in the case of a boy and his father) strength of identification seems to relate less to sex than to power held by the parent. In fact, the child's identification is strengthened by both nurturance and power or salience.

While most studies indicate the mother to have a more significant influence than the father on the child's sex-role development, the parents' respective roles are unclear. In at least one sense, the father's role is even more fundamental than the mother's. While the mother is prone to treat children of both sexes as children, the father treats them as boys or girls (Goodenough, 1957).

Modes of child-rearing contribute to differential patterns of masculinity or femininity. Apparently, both boys and girls are feminized by severe control of aggression, by use of ridicule and physical punishment, and by the mother's punitiveness and nonpermissiveness toward aggression. Fathers who assume an important role in caretaking and affection have a masculinizing effect, on their daughters as well as on their sons (Sears, 1965).

The sex-role situation differs somewhat according to culture and subculture. In general, sex roles are differentiated earlier and to a greater extent in the lower social classes. Typically, the lower the social class, the higher the boy's status relative to the girl's. Cross-cultural differences in roles are even greater than subcultural ones. In all known societies some degree of sex-role differentiation exists. After studying sex-role differences in 224 societies, Murdock concluded that men generally engage in such activities as lumbering, hunting, fishing, and trapping, and women in more sedentary tasks such as grinding grain, cooking, preserving meat and fish, and gathering fruit and vegetables (Murdock, 1937). However, cultures differ in the specificity of the sexes' functions. In general, adherence to sex roles is less strict in societies that are highly advanced technologically.

The performance of different roles results in differential personality traits. The assumption of the male sex role in one cultural setting may require attitudes and behaviors almost the polar opposite of those in another setting. In the Western World, boys are typically aggressive, but among the Tchambuli in New Guinea the girls of 10 and 11 are bolder than the boys. In fact, few behavioral and social scientists agree on the basic psychological attributes of masculinity and femininity that cut across all cultures (Mead, 1961). Nevertheless, in a survey of 110 cultures, the female prototype tended to be obedient and docile, the male self-reliant and achievement-oriented (Barry et al., 1957).

The current status of sex roles in our own culture is not clear. Apparently, they are in a state of flux. Evidence indicates that the gap between the sexes is narrowing (Rosenberg & Sutton-Smith, 1960). However, the changes may be more apparent than real. That is, the changes are in peripheral areas. Males still insist on reserving aggression and dominance for themselves; and females still frown on males who adopt feminine mannerisms and traits. The girl who aggressively assumes leadership is still perceived as a swashbuckling Amazon; the boy who accepts feminine leadership, even in areas where she may be superior, is seen to be a junior Milquetoast.

Whether sex roles should be consciously modified or not is simply one unanswered question in this area. There are many others. What is the role of biol-

ogy in sex-role differentiation; and how are biological and social sex roles related? What degree of congruence actually exists between the child's social sex role and the cultural sex-role ideal? Does the conformity expected of females effect a rape of the mind; or does such conformity simply prepare them for the nurturant role society has decreed that they follow? Few studies have been directed toward learning just why individual children react to their social sex roles as they do. Nor has much attention been paid the child's biological sex role, which relates more to the physical consequences of sex—for example, masturbation, sex play, sex deviance (Oedipus complex, homosexuality, and the like), and sex information. Sex research is difficult for a number of reasons. Even scientists are not without bias in this area, since our culture is particularly prohibitive with respect to sexuality in the child. Such research as exists has often been narrow in scope. And studies are further complicated by the fact that sexual behavior acquires functional relationships with a great variety of nonsexual motivational systems. The learning situation for each child is unique.

One of the few good studies of children's biological sex roles, reported in the first selection that follows, describes children's views about sexual differences and the creation of babies. This study, done in Israel by Drs. Hans and Shulamith Kreitler, involves children of various racial and national origins, and provides an opportunity for making cross-cultural comparisons. The Kreitlers, both Professors of Psychology at Tel Aviv University in Israel, interviewed boys and girls aged four to five and a half years, of European and American as well as North-African and Asian ancestry.

The second and third articles, by Hartley and by Lynn, analyze the sex roles of girls and of boys respectively. Dr. Hartley is Research Professor of Human Development at the University of Hawaii, and Dr. Lynn is in the Psychology Department at the College of San Mateo in California. Both writers are among the leading researchers and writers on this topic. When asked by the editor how she came to be interested in the female's sex role, Dr. Hartley stated simply, "I happen to have been born female." Dr. Hartley believes this article is still valid, although she is continuing her research on the topic.

In her article, Dr. Hartley indicates the various ways that girls acquire sex-role behaviors and reports greater variability among them than among boys. Differentiation occurs through highly complex processes with significant variations by social class.

Dr. Lynn integrates into a theoretical framework the material on boys' sex-role identification scattered throughout the literature. His chief conclusion is that males tend to show same-sex-role preference with underlying opposite-sex-role identification, whereas females tend to show opposite-sex-role preference with underlying same-sex-role identification.

CHILDREN'S CONCEPTS OF SEXUALITY AND BIRTH

HANS AND SHULAMITH KREITLER

The views held by children about the creation and birth of babies are considered of great importance in **psychopath-**

Abridged from "Children's Concepts of Sexuality and Birth," *Child Development* (June 1966), Vol. 37, pp. 363–378. Reprinted by permission of the authors and The Society for Research in Child Development, Inc.

ology and in **developmental psychology**. Nevertheless, no systematic empirical material about this subject has existed until now. Freud (1959), who refers to infantile concepts of sexuality in most of his works, has indeed devoted a special study to children's concepts of sexuality, but his material is based only in small part on direct observations of children. Although he considers the direct reports given by children as "the most unequivocal and fertile source" (Freud, 1959, p. 209) of information, the factual basis of his own postulations and hypotheses is provided mainly by the memories of adult patients concerning their childhood. The same is true of his followers, with the difference that what to Freud was a hypothesis became for them a dogma. Thus Rank (1922) compared children's theories of sexuality, as reported by Freud, with various primitive myths, and by means of speculative analysis, found many correspondences. Yet he by no means investigated whether the given concepts of sexuality actually correspond to what children think and believe.

Piaget (1960, pp. 360–369), who pioneered in the empirical study of children's concepts, also made various postulations about infantile concepts of sexuality without basing himself on any systematic collection of material. He justifies this procedure, which is contrary to his usual method, by claiming that a systematic questioning of children in this domain is contraindicated by moral and pedagogic considerations. Since Freud also attributed our lack of information about infantile sexual theories to the moral outlook of adults, there exists, at least on this point, a certain agreement between these two scientists; but as far as children's concepts of sexuality are concerned, the conclusions of Freud and **Piaget** are entirely different. . . .

Method

Our subjects were 185 children: 95 boys and 90 girls, in the age range of 4–5½ years. All the children were born in Israel, but their parents were born in the following countries: Israel, Yemen, Iraq, Syria, Persia, Libya, Morocco, Russia, Poland, Lithuania, Hungary, Rumania, Germany, Holland, Denmark, England, and the United States. The educational level of the families from the Arab countries and from Persia was generally very low (more than 50% of the parents were illiterate), and the atmosphere at home corresponded largely to the patriarchal habits of the Orient. The parents from Europe and the United States had had at least 6 years of schooling and, in many cases, had reached university level. The parents of 40 children lived in collective agricultural settlements (**kibbutzim**); all the others lived in larger or smaller towns located in most parts of the country. All but five children had elder or younger siblings.[1]

The interviewers were 25 kindergarten workers attending a postgraduate course of studies at the Psychological and Pedagogical Departments of the Tel-Aviv University. They had been specially trained for the interviewing and were continuously supervised.

The interviews took place mainly in kindergartens and sometimes took the form of a question-and-answer game, but were always conducted in such a way that each child was interviewed separately and not in the presence or within hearing of the other children.

The questionnaire included 22 questions, some of them alternative questions. If a child mentioned that the baby was in the mother's belly before his birth, he could then be asked how the baby entered the belly or came out of it. But if none of his answers included any hint at pregnancy, the succeeding questions had to be skipped. The procedure of questioning enabled the child to talk freely, sometimes to digress from the theme, and even to express his fantasies, or "to romance" in the sense given to this term by Piaget (1960, pp. 10ff.).

As a consequence, the children often offered material relevant for questions

[1]From here on, children of European and American ancestry will be referred to as "Western children" and those of North-African and Asian ancestry as "Oriental children."

TABLE 1. *Answers to the Question: "Where Does the 'Pipi' Come Out?"*

TYPE OF ANSWERS	BOYS' REPLIES (%)		GIRLS' REPLIES (%)	
	ORIENTAL	WESTERN	ORIENTAL	WESTERN
From "here" (points to place)	15	32	20	6
From the hole in the "pipi"	55	45	40	41
From the behind	10	15	35	27
From the belly	....	6	5	16
Evasive answers	20	2	....	10

which had not yet been posed. Nevertheless, these questions were asked at the appropriate point. The formulation of each question was fixed, and no interviewer ever changed it. Apart from several alternative questions, the serial order was also fixed and allowed for no changes. In the case of 17 children who from the very beginning did not cooperate or manifested clear signs of anxiety, the questioning was interrupted early. These children are not included in our group of 185 subjects. All the answers and talk of the children during the interview were recorded in their entirety and used in the evaluation of the results.

Analysis of the results has shown that significant differences existed only between the answers of children from Western families and those of children from Oriental families but not between the answers of children classified according to the particular countries from which their parents came. Also, the results for children from collective settlements and from towns were fairly homogeneous. Accordingly, the only classifications preserved in the presentation of the material are those of sex and of Oriental or Western origin of the parents. Our group included 60 Western boys, 60 Western girls, 35 Oriental boys, and 30 Oriental girls.

Differences in Sex

The question whose purpose was to provide information about the amount of knowledge children have about sexual differences and about their preparedness to talk of what they know was as follows: "Where does the pipi come out?" And thereafter: "How is it [for boys] with girls, [for girls] with boys?" (To Israeli children, "pipi" means urine, as well as the sexual organs, and was used here in the sense of urine). We chose this somewhat indirect way of asking, since it is much more usual for children to talk about urinating than to discuss differences in sexual organs.

As can be seen from Table 1, Western children are better informed about the location and function of their sexual organs than are Oriental children; and the boys in each group are better informed in this respect than are the girls in the respective groups. The latter result may stem from the fact that for a boy it is relatively easy to differentiate between the penis and the anus, while for a girl the similarity and nearness of vulva and anus may favor the formation of one unitary concept.

The results summarized in Table 2 are similar in that the information boys have about the sexual organs of girls is more exact than that which girls have about the sexual organs of boys. Here again, Western children seem to be better informed or more ready to communicate their knowledge frankly than are Oriental children. But the most important result

TABLE 2. *Answers to the Question: "How Is It [for Boys] with Girls, [for Girls] with Boys?"*

TYPE OF ANSWERS	BOYS' REPLIES (%)		GIRLS' REPLIES (%)	
	ORIENTAL	WESTERN	ORIENTAL	WESTERN
Detailed description of sex organs of the other sex	40	77	45	80
From the behind	30	16	10	....
"It is different"	....	4	15	17
"There is no difference" (accompanied by description)	10	2	....	2
"I don't want to say"	10	....	5	....
"From the trousers when he stands"	....	....	15	....

in this domain is that the overwhelming majority of Western children, and more than half of the Oriental children, are able to give such exact information about the sexual organs of the other sex. This result clearly contradicts Freud's claim that boys of this age believe unconditionally in the universality of the penis and distort or ignore any observations which testify to the contrary. Only 2 percent of Western boys and 10 percent of Oriental boys knew of no differences between boys and girls, and only 1 percent and 10 percent respectively, abstained from answering at all.[2] Still more important is the fact that not even one boy hinted in any way, through any additional remark, that he considered the girl to be a castrated boy. Also, the answers and additional remarks of the girls do not justify any assumption in this direction.

Accordingly, we regard these results as a direct refutation of the Freudian thesis about the infantile belief in the universality of the penis. Whether Freud's claim was at least valid in regard to the children of his own time, or whether he was altogether mistaken because he had no empirical observations upon which he could rely, can no longer be decided unequivocally. We lean more to the second possibility. Though in Western families a remarkable liberalization has taken place in regard to sexual taboos in children's life—and this is in great part thanks to psychoanalysis—Oriental families (also those in Israel) have remained almost untouched by this development. Nevertheless, 40 percent of the Oriental boys gave exact descriptions about girls, and not a single one of their answers hinted at the possibility that girls have lost their penises.

In addition to their theoretical importance, the results summarized in Tables 1 and 2 are methodologically important for the research as a whole in that they provide a kind of criterion for the sexual ingenuousness of the children. Since overall differences in sex are in general discussed more rarely and with greater inhibition than are pregnancy and birth, we may assume that the children will divulge their concepts concerning the origin of babies as readily as they did their knowledge about the differences in sexual organs.

[2]All percentages in the text and tables are rounded off.

Concepts about the Creation and Birth of Babies

In order to avoid the possibility of the interviewed children getting hints or information through questions which mention pregnancy directly, two introductory questions were used with the aim of finding out which of the children grasped the relation between the enlarged belly of the mother and the subsequent birth of the baby. The two questions were "How does a baby come into the world?" and—in case the answer related only to the hospital, doctor, etc.—"Where was the baby before?" In their answers, 95 percent of Western boys, 94 percent of Western girls, 87 percent of the Oriental boys, and 92 percent of the Oriental girls mentioned the enlarged belly of the mother. Accordingly, the subsequent questions which related directly to the mother's belly were posed only to 166 children (later mentioned as "reduced experimental group").

The two questions, the answers to which were intended to provide information about infantile theories on the creation of babies, were as follows: "What must the mother do in order to get a baby?" "How is it that the baby is in the mother's belly?" The results are given in Tables 3 and 4. A summary of the children's answers, based upon the results of Tables 3 and 4, reveals the existence of several concepts about the origin of babies, among which three are particularly frequent, while the others find so little support that we shall not dwell upon them now. The commonest theory is that the baby is created in the mother's belly from the food which she eats. The fatness of the mother and the creation of the baby are grasped as identical. Accordingly, in order to get a baby, the mother

TABLE 3. *Answers to the Question: "What Must the Mother Do in Order to Get a Baby?"*

TYPE OF ANSWERS	BOYS' REPLIES (%)		GIRLS' REPLIES (%)	
	ORIENTAL	WESTERN	ORIENTAL	WESTERN
Eat much (stress put in fatness of the mother and a swollen belly)	....	72	50	15
Eat in order to feed the baby in her belly (stress put on kinds of food)	35	10	22	30
Swallow the baby through the mouth	40	5	5	....
Go to the hospital in order to give birth to the baby	15	2	23	17
Perform intercourse with the father	....	2	....	....
Various details of caring for the baby after birth	....	8	....	15
Various details of caring for herself during pregnancy	....	....	....	10
"Fantastic" theories	5	1	....	....
No answer	5	....	....	13

TABLE 4. *Answers to the Question: "How Is It That the Baby Is in the Mother's Belly?" (Answers of "Reduced Experimental Group")*

TYPE OF ANSWERS	BOYS' REPLIES (%)		GIRLS' REPLIES (%)	
	ORIENTAL	WESTERN	ORIENTAL	WESTERN
He is formed from the food mother eats	5	73	50	17
He was swallowed through the mouth	48	5	10	....
He entered through the sexual organ	....	5	....	2
He has always been in the belly	45	8	25	38
"Fantastic" theories	2	2	15	10
The belly was cut open and the baby put inside	....	7	....	10
No answer	....	....	....	23

must eat a lot, with the quantity of food counting much more than the quality.

With a somewhat lesser frequency appears the theory that the baby need not be created because it has always existed in the mother's belly and was already there when the mother was still a small girl. Some children add hereto that the baby was previously in the grandmother's belly, and one subject went so far as to claim that the baby was originally "in the belly of our Mother Eva, that old one in Paradise. Then it was in the belly of her daughter, and then in the belly of her daughter's daughter," and so on "until it came to the belly of its own mother." The food which the mother eats also seems important to the supporters of this theory, not however because the baby is created out of it, but because it becomes bigger and grows through it. Accordingly, not the quantity but the quality of the food is stressed. Many children enumerate "the good things" which mother must eat for the baby, for example, meat, milk, cream, eggs, much butter, etc.

In the third degree of frequency appears the theory that the mother must first swallow the baby in order to be able to bear it later. The supporters of this theory also stress that the mother must eat well in order to make the baby grow, but they mention neither special kinds of food nor big quantities in particular.

A comparison of these results with Piaget's claim reveals that precisely the artificialistic concept, to which Piaget attributes central importance in the domain of birth theories, does not appear here at all. Neither do we find even the remotest hint at the belief that the parents construct the baby artificially. Also, what Piaget calls the "pre-artificialistic" concept finds no direct expression but seems to form the conceptual basis of the third birth theory, for the baby must first exist independently of the parents in order to be swallowed by the mother later. Again, the answers which have been summed up by us to form the second theory (the baby has always been in the belly) are suggestive of the concept of immanence, although in a sense different from that of Piaget, for here the emphasis is upon a direct and bodily relation between mother and baby. Our results also lend indirect confirmation to Piaget's observation that the concept of immanence, which clearly precedes causal thought, belongs to a rather early developmental stage. While the first birth theory, which is based upon causal thinking, was advanced mostly by

children of Western origin, the second and third theories were formulated most frequently by children of Oriental origin, who, as shown earlier, possess less sexual information than children of the former group.

Also, our findings lend only partial confirmation to the findings of Freud about infantile theories of the creation and birth of babies. But since, according to Freud, the children's starting point is not the creation but the birth of the baby through the anus, from which fact they conclude that it must have been created through the mouth, a comparison of our results with Freud's claims can only follow the presentation of the children's answers to questions which deal with the actual birth of the baby. The question posed to the subjects of the "reduced experimental group" was: "How does the baby come out of the mother's belly?" After the children answered this question, a series of further specific questions was posed to them with the aim of ascertaining whether the child thought it possible that the baby came out through the anus, the mouth, the navel, the sexual organ, or whether its exit necessitated the opening of the mother's belly. The children had to answer each of these questions with a "yes" or a "no" (see Tables 5 and 6). If the child mentioned, in the previous, spontaneously formulated answer, a possibility not enumerated here, this possibility was also offered him in order to examine the reliability of the answer.

Children's concepts of sexuality and birth

The far-reaching correspondence between the results of these two tables is very surprising, but still more so is the content of the answers. The commonest answer is the one referring to the opening of the belly, which was given spontaneously by 52 percent and was accepted as possible by 63 percent. On the other hand, birth through the anus was mentioned spontaneously by only 2 percent of the Western boys, that is, by 0.5 percent of the whole experimental group, and was accepted as possible by only 5 percent of the children, while 95 percent declared such a form of birth to be impossible. This concept ranks last among the spontaneously offered solutions and is

TABLE 5. *Answers to the Question: "How Does the Baby Come Out of the Mother's Belly?" (Answers of "Reduced Experimental Group")*

TYPE OF ANSWERS	BOYS' REPLIES (%)		GIRLS' REPLIES (%)	
	ORIENTAL	WESTERN	ORIENTAL	WESTERN
Through the belly which should be cut open	68	50	50	58
Through the sexual organ	....	2	....	12
Through the navel	8	6	5	8
Through the mouth	....	2	5	....
Through the anus	....	2	....	....
By its own will	4	10	15	5
He has to be born	18	18	10	10
"Fantastic" theories	....	....	10	5
No answer	....	....	5	7

TABLE 6. *Answers of Reduced Experimental Group to a Series of Specific Questions*

	BOYS' REPLIES (%)		GIRLS' REPLIES (%)	
	ORIENTAL	WESTERN	ORIENTAL	WESTERN
Can the baby come out through the:				
Anus?				
Yes	4	3	5	8
No	96	97	95	92
Navel?				
Yes	24	6	35	21
No	76	94	65	79
Mouth?				
Yes	4	6	.....	6
No	96	94	100	94
"Pipi"?				
Yes	4	8	.....	33
No	96	92	100	67
Cut-open belly?				
Yes	75	50	85	47
No	25	50	15	51

the last but one in rank among the forms of birth accepted as possible.

In view of these results, Freud's claim that the anal theory of birth is the commonest one is no longer tenable. His apparently very logical interpretation—that children conclude from the anal theory of birth that the creation of the baby is through the mouth, since the relation between food and stool is already known to them—is similarly refuted. However, the oral theory of creation, which Freud postulated but did not consider as important, is supported by our results, and even appears more frequently than any other theory (see Tables 3 and 4). In regard to both Freud's and Piaget's claims about infantile theories of the creation and birth of babies, our results lend support precisely to those points which did not seem important to these researchers, since they did not play a central role in the formation of their theories. But those claims which form the basis of the theory of Piaget and of the contradictory one of Freud in this problem have been refuted by our results.

The Task of the Father

From an anthropological viewpoint, the children's answers to the question: "What should the father do in order to make a baby appear?" are of particular importance (see Table 7).

The predominant feature characterizing the results is that it seems difficult for the children to grasp any causal relation between the father, on the one hand, and the pregnancy and birth, on the other hand. Since in almost all the concepts we found that the nourishment of the mother plays an important role concerning the origin of babies, the most direct relation between the father and pregnancy follows from those answers which refer to food and eating. Summing up the answers of boys and girls from both cultural groups, we find that only 22 percent of all the children believe that the father must give the mother something to eat, or even himself eat, in order to make a baby appear. However, the overwhelming majority of the answers refer to the father's task in the period after the birth of the baby: 75 percent of the Western girls and 60 percent of the Oriental girls, though only 47 percent of the Western boys and as few as 25 percent of the Oriental boys, consider the father's participation to consist in helping the mother after birth, for instance, in earning money for her, or in preventing the other children from making too much noise or from harassing her too much. There are more girls than boys, and there are more Western than Oriental children, who gave answers belonging to this category. Apparently, masculine help at home already finds more favor with small girls than with small boys. However, the reason for the fact that only 25 percent of the Oriental boys mention direct help by the father after the birth of the baby becomes clear from another group of answers. Of the Oriental boys, 44 percent, a percentage higher than that found in any other category of answers in this group, mention as

TABLE 7. *Answers to the Question: "What Should the Father Do in Order to Make a Baby Appear?"*

TYPE OF ANSWERS	BOYS' REPLIES (%)		GIRLS' REPLIES (%)	
	ORIENTAL	WESTERN	ORIENTAL	WESTERN
Prepare food for the mother, to feed the mother	16	20	25	14
Take the baby out of the mother's belly in the hospital	....	1	....	....
Give the mother his semen	....	2	....	....
Eat himself in order to have a baby	1	....	10	2
Pray to God	....	....	5	....
Nothing	14	20	....	7
Earn money and help the mother after the baby has appeared (e.g., do all the household chores)	25	47	60	75
Behave nicely to the mother while she is in the hospital	....	10	....	....
Persuade the mother to have a baby	....	....	....	2
Mentioning of various routine activities of the father which have nothing to do with the baby or the mother	44	..	....	....

the task of the father in the creation of babies activities which have nothing to do with the mother or with the household but which correspond to the usual habits and occupations of men in their environment, such as reading the newspaper, going for a walk, or beating the mother. The superior rank and the priority of men in the Orient are reflected most clearly in these answers. The fact that not even one Western boy gave an answer which belongs to this category allows us to assume that the birth of a baby probably influences the father's mode of life more markedly in a Western than in an Oriental milieu. But the fact, also, that no Oriental girl gave an answer which belongs to this category suggests the conclusion that infantile concept formation is conditioned not only by the family milieu but by one's own wishes too, which are also shaped by the sex to which one belongs, and that perhaps the germ of the future emancipation of the Oriental woman already exists in the concepts of the small girl. . . .

Discussion

A survey of our results shows that the sexual concepts of the children deviate in essential points from the concepts ascribed to them by Freud and Piaget. Freud's theory about the infantile belief in the universality of the penis was refuted directly by our results. The argument frequently mentioned in discussions about psychoanalytic theses—that the methods of the questionnaire or the interview are unfit for the examination of such theses, since they do not reveal repressed material—cannot be raised here. For, according to Freud, children express directly the belief that women also have a penis and are fully aware of it, while they tend to repress or to distort eventually perceived sexual differences. Since our young subjects were well informed about sexual differences and talked about them freely but gave no direct or indirect hint about the Freudian "pan-penisism," this psychoanalytic hypothesis no longer can be upheld. Accordingly, another theoretical basis would have to be found for the castration complex, which is very often explained precisely through this hypothesis.

Furthermore, our results yield no support for the Freudian claim that children uphold the theory of birth through the anus and only very meager support to the claim that children hold that their own parents have created babies in a manner different from that of other parents. However, we have found confirmation for Freud's theory about the creation of babies in an oral manner.

In regard to Piaget, it is noteworthy that his theory about the artificialistic concept, to which he ascribes great importance, was in no way confirmed, while his claim that children believe in the independent pre-existence of babies and that this belief is more primary and primitive corresponds in general with our results.

Summing up, our results—regardless of Freud and Piaget—reveal that children between 4 and 6 years of age are well informed about sexual differences and speak freely about what they know. They explain the creation of babies by the eating of particular types of food, through the swallowing of a ready-made baby, or through the immanent existence of the baby in the mother's belly. The function of the father consists, according to them, mainly in helping the mother. The fetus is envisaged as sleeping, playing, or suffering; birth is explained mostly through the concept of opening the belly.

The conclusions and implications of these results are far too rich to allow for their comprehensive clarification within the framework of this article. We will, therefore, restrict ourselves to some brief remarks. Of great importance to psychopathology is the question of how far children in the age range of 4–6 years are able to form adequate sexual concepts. As a conclusion from our results, it can no longer be claimed that insufficient causal thinking (Piaget) or infantile libidinal development (Freud) hinder the adequate sexual enlightenment of children. Therefore, there is no reason to

encourage children in forming "infantile" sexual concepts through offering them false or defective information. The pathogenetic danger concommitant upon some of these concepts becomes evident when we remember that the infantile concepts are generally not corrected through knowledge acquired later but are merely covered up by it. For instance, the infantile concept of birth through the opening of the belly may possibly lie at the core of the neurotic anxiety of pregnancy, or the concept of creating the baby through the mouth may underlie complaints about indigestion, etc.

Also of social-psychological importance are our results about the infantile ideas concerning the role of the father in the creation of babies. Through the almost exclusive stress on the role of the mother in all the concepts of creation and birth, the conceptual foundations for an intensive relation between mother and baby are already established a priori. The participation of the father, however, is mostly seen only in the form of social help. It should not surprise us, therefore, that it takes adult men and women so long to understand that the role of the father is far from being fulfilled by the earning of money. Accordingly, we may assume that a modification of the infantile father concept should prove contributive to the later problem of coming to terms with the real father role.

Although we have not examined the modifiability of infantile sexual concepts directly, our results also yield some hints about this problem. From the fact that we not only found differences in concepts between Western and Oriental children but have also observed time and time again how, for instance, the typical life habits of the Oriental families are reflected in the concepts of the Oriental children, we may conclude with a high degree of probability that infantile concepts may be changed, at least up to a certain degree, through changes in the milieu of the home in which the child lives. Therefore, it does not seem to us over-optimistic to hope that psychic and social adjustment may be facilitated through planned influence intended to shape the concept formation of children.

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A DEVELOPMENTAL VIEW OF FEMALE SEX-ROLE DEFINITION AND IDENTIFICATION

RUTH E. HARTLEY

In this paper I shall confine myself to discussing female sex-roles in *childhood.* I intend only to suggest some early dynamics which might be considered in addition to the usually postulated approval-reinforcement and the semantically vague "**identification**"; to discuss the relationship of some published findings

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with these dynamics and with each other; and to add a few bits of information derived from a recent study of school-age children, some aspects of which have been reported elsewhere (Hartley, 1959–60; 1961a; 1961b; 1961c; Hartley and Hardesty, 1962; Hartley and Klein, 1959).

By "sex-role" I shall be referring to those sets of related cognitions maintained by subjects for objects designated as members of the female sex (Biddle, 1961). These cognitions may be first order (i.e., perceptions of what females do) or second order (attributed expectations, such as what females like to do). Definition of the female sex-role consists of the complex of behaviors considered characteristic of or appropriate to persons occupying the female status, and the attributed expectations concerning those behaviors. Implementation of the female sex-role will be defined by the subjects' preferences for sex-role activities.

Sex-role definitions involve also age-role definitions. The female sex-role at age 5 is specific to the attributes of the five-year-old and different from the female sex-role at 25. At each developmental level a sex-role specified for that level is implemented. Role cognition and expectations may, however, develop in anticipation of future statuses by perception of role-implementations by older persons, much like the development of "cognitive maps" of Tolman's (1948) rats. Thus, although sex-role *implementation* can be assessed only at the current age-status of the subject, sex-role *definition* proceeds on a multiple-track (Duvall, 1955; Finch, 1955; Hartley, 1959–60, 1961b, 1961c; Hartley and Klein, 1959), depending on the perceptibility of the differences among sex-age-status behaviors and the variety of exposure of the subjects. In this discussion, time will permit dealing with sex-role definition on a single track only.

Attempting to trace the processes by which sex-role definition comes about early in life, we are hampered by a lack of empirical data for ages younger than three years. Since evidence for sex-role differentiation exists for four years of age (Abel and Sahin Kaya, 1962; Brown, 1956; Emmerich, 1959; Hartley and Goldenson, 1952; Rabban, 1950), it seems reasonable to expect that some relevant preliminary processes must take place earlier. I am assuming on the basis of evidence that these are some sort of learning processes, rather than inevitable maturational components of the biological process. The function of these processes would be to specify the appropriate behaviors out of a matrix of all those possible, to stabilize the appearance of such behaviors, and to inhibit the appearance of inappropriate ones. However, a search of the literature and a widespread inquiry by correspondence has been singularly unavailing with respect to systematically collected empirical data which could blueprint such processes. I shall therefore venture to suggest some of them hypothetically, on the basis of unsystematically collected and inadequately controlled empirical data.

One widely accepted point of view about sex-role specification holds that some of the related behaviors are developed as integral personality functions, without awareness on the part of the subject of their sex-status connection. For example, little girls may be "gentled" as infants and little boys "roughhoused," with ensuing built-in personality dimensions. The sex-differentiated disciplinary techniques noted by Sears, Maccoby and Levin (1957), would fall into this category of event.

An informal survey of sex-typing techniques used during the early years (about one year to five years of age) in 22 young families revealed several kinds of handling by which generalized *molding* may take place. For convenience, we shall call one of these "socialization by manipulation." For example, young mothers of female run-arounds report they "fuss with" the babies' hair, dress them "feminine," and tell them how pretty they are. If we apply to this situation **Piaget's** (1952; 1962) concept of imitation

through indifferentiation, we can see how it could lead to self-manipulation of the same kind and, as personal differentiation takes place, to the incorporation of its quality as a basic element in the self-concept. This seems to me not far removed in effect from the passive "molding" of infants described by Mead (1954) in her reports on Balinese children.

Canalization (Murphy, 1947) also seems to play its part as a subtle delimiting process. For example, dolls and carriages are almost invariably mentioned as among the toys specifically made available to little girls (as differentiated from toys furnished to both sexes). Opportunity to manipulate these with satisfaction, to incorporate them into early imitative sequences, provides the basis for both heightened awareness and anticipation of pleasure in relation to similar objects. Piaget and others have indicated that sheer familiarization can provoke positive responses (Krugman, 1943; Piaget, 1952). This emotional toning becomes part of the total perception of the familiar objects, giving them a competitive advantage against more neutral candidates for attention. If this result were not reinforced, it might not endure against the counter-pressures of satiation and novelty. For girls it *is* reinforced, however, by repetitions of the toys in novel forms and by constant encouragement to more complex manipulation by the availability of a continuous stream of variegated accessories. If perceptual stimuli for appropriate imitative acts also are present in the home, the intrinsic reinforcement value of manipulating these objects is intensified by their participation in the child's ludic assimilation of the external world to the ego. This process of perceptual priority and manipulatory reinforcement should obtain for all objects or aspects of them (such as color), which are selectively made available to the child early in life and which are perceptually meaningful. Thus, preferences for pastel colors (now available in electric trains), for feminine types of clothing, for certain qualities of movement, as well as for games and playthings, can theoretically develop without specific extrinsic reinforcement and without awareness of sex-status relevance on the part of the subject.

Another type of limiting sex-directional molding of the child takes place early in life through parental applications of sex-appropriate verbal appellations. Starting some time in the first year, the child hears frequently expressions like "That's a good girl"; "Don't be a bad girl"; "Where's daddy's girl?"; "There, now, you really are a pretty girl." Coming before the child is capable of forming concepts, before consensual meaning is acquired, before real classification on any stable basis is possible, before discriminative learning is likely to have taken place, before ego-differentiation has developed, what *can* the repetition of the sex-designating term mean to the child? We suggest that it serves as a sign leading to self-identity, much as a name does, and is comprehended syncretically as representing whatever complex of sensation and emotion is experienced at the time of its use. It would be logical to expect it to be built into the self-concept as a symbolic self-designation. As such, it might serve later as a "signalizer" to raise the perceptual saliency of girl-specific references and referents. As the child is exposed to others who are similarly designated, the common reference should both encourage the identification (self-generalization) of indifferentiation and serve as a basis for the formation of a concept of a general category of being to which one belongs, as perceptually distinctive and specified others also belong. These results would then be useful, through heightened selective awareness, in developing the cognitions necessary for implementing appropriately one's sex-role at childhood levels. That such selective awareness is indeed developed is indicated by data reported respectively by Hartley (1961a) and by Baum (1957).

An early step in the perception of adult sex-appropriate behaviors seems to

be the parental practice of encouraging indifferentiated identification by the frequent use of the expression "just like mommy." Little girls are told they will grow up to be ladies "just like mommy" if they eat up all their food. Nail polish is applied to tiny nails so that they are "just like mommy's." Perceptual similarity is heightened by mother-daughter dresses, with appropriate verbal attention-arousal. Kits of dress-up clothing are supplied with high-heeled shoes "just like mommy." The young child's tendency to pan-identification and pan-imitation seems to be given specific directional limitation by this device, resulting in a more pronounced "self-clumping" with the mother than with the father—disregarding for the moment the factor of uneven exposure. (Margaret MacFarland suggests this represents a state of "**symbiosis**" [1959, 1960].) This would logically lead to a relatively favored position for the mother, as compared with the father, in the attention of the young girl. That this occurs is indicated by the preschool girl's greater information about the mother's activities (Baum, 1957), by attributions to the mother of more activities than to the father (Baum, 1957; Emmerich, 1959), and by attribution to her of own-sex preference in relation to children (Hartley and Hardesty, 1962). Since this anti-differentiation technique seems to be employed earliest in the feeding situation, when children are still being fed by their mothers, it would appear to be among the earliest sex-typing *indoctrination* devices used.

Around the time toilet training is becoming well established, when the child is beginning to manage her own toileting behavior, a similar device with more stringently limiting implications comes into use, one facilitating discrimination learning. The observant little girl who wants to urinate from an erect position is told, "No, little girls don't do that. You must sit like mommy. Only daddies and boys stand." This may be the first direct negatively phrased sex-oriented limitation the young female has encountered. It not only emphasizes further her kinship with women, but calls attention insistently to her separation from men.

A developmental view of female sex-role definition and identification

Parallel with this phase, or a little later, another divisive note is struck when the girl wants to shave as her daddy does. She is usually told, "Girls don't shave—only daddies do." At the same time she is permitted to imitate her mother in applying cosmetics and using perfume, both apparently intrinsically attractive activities. She is also often supplied with her own cosmetic kit, her own perfume, her own shampoo and toilet water, her own bath fragrance, so that what starts as symbolic imitation at two or three years of age becomes reality activity by four or five. Similarly, not only is the small girl invited to participate in household tasks, but she is supplied with the tools to imitate sequences of female house-keeping behavior. This is not a preparation for future roles, but is part of the female child's age-status role from about two years on. If Piaget (1952) is correct in his analysis of the importance of imitation for perceptive activity, which in turn creates the memory image on which deferred imitation (symbolic play or dramatic play) is based, furnishing the girl child with the tools for imitating traditional female activities is a basic step in sex-typing. It is a basic step because it encourages practice in selected sequences of behavior, resulting in the satisfaction of mastery and further repetition for the sheer pleasure of repeating what has been mastered. Continued exteriorization of the image leads, furthermore, to greater accommodation of the image to reality. If imitation is always a continuation of understanding, as Piaget contends, that which is more repetitively imitated, with continued access to the model, is better understood. If, in addition, it is true that where there is imitation of visual models only insofar as they are understood, access to the tools of imitative activity takes on further significance. A positive relationship here is suggested by the

importance of sensorimotor activity in developing "understanding" early in life. That is to say, the availability of such tools, with which one can go through perceived movements easily to achieve perceptible effects, may endow the original evocative perceptions with a meaning beyond that inherent in the partial imitation possible when there are no appropriate objects to manipulate. This effect has impact in addition to encouraging the continuation of the "practice" into ages when manipulating completely symbolic objects is no longer relished.

I have made no mention of the concentrated exposure to women's traditional activities, which in itself could account for a preference for imitating these activities through the reinforcing effects of familiarization and repetition *per se*. Little boys are similarly exposed, after all, and often invited to participate. To my mind, significant differential emphasis is furnished by unhindered access to the means for continuing the activity on a deferred basis. Such access encourages both assimilation of the percepts to the ego—thus endowing them with more positive affect—and accommodation of the imitation to more clearly perceived reality as ego-differentiation proceeds. With imitative activity filling the gap until the child is able to participate meaningfully as a partner in home-centered behaviors, the definition of this aspect of the female sex-role seems to proceed without interruption, and with continuous reinforcement, almost from the cradle on. With the advantage of primacy as well as continuity-amid-change, with the impact of positive self-reinforcement through satisfaction in perfected performance, the traditional domestic female role seems to have an advantage over other aspects of role definition; this may account partially for the apparent single-minded purposiveness with which the newly adult female seeks to achieve the status connected with it.

There is, however, another aspect to female sex-role definition in childhood. Middle class mothers rarely feel strongly about *limiting* their young daughters to "feminine" toys or about inhibiting "boyish" motor behavior. Girls who are given houseplay equipment are also given tricycles and guns and baseball bats if they wish them. While there seems to be a tendency to discourage girls from fisticuffs, most other interests and behaviors are viewed tolerantly during the preschool years. One mother's comment, "There's no point to making an issue of it—when they need to be feminine they grow out of their tomboyish ways," seems to reflect a pervasive attitude. Hence, although some aspects of femininity are emphasized by techniques of evocation, these are not necessarily exclusive nor restrictive. From the young subject's point of view sex-role, child-role, and self-definition are blended in an unselfconscious complex of unobstructed behavior. If little girls are permitted to play with guns as well as with dolls, playing with guns is part of the female sex-role definition. If they meet no specific strictures *against* playing with trains or trucks (even though these objects may not be customarily supplied to them), expressing interest in them in no way violates their implementation of their sex-role as they perceive it. To interpret such choices—on a one-session basis, as occurs in most "tests" of early sex-identification—as "masculine-striving" is to suggest a lack of understanding of both developmental milieu and individual personal dynamics.

The gradual nature of the development of limitation and specification in toy preferences by female children, as reported by several investigators (Brown, 1956; Hartup and Zook, 1960; Rabban, 1950), may logically have multiple determinants such as (1) a continuation of the narrowing influences of canalization, (2) the cumulative effect of differential awareness, and (3) the parallel personality and cognitive processes of ego differentiation and concept formation alluded to earlier. It seems no accident that accurate sex-status self-identity (Rabban, 1950), early initial empirical evidence of limited sex-appropriate toy preferences (Hartup and Zook, 1960; Rabban, 1950); intense

preoccupation with imitative houseplay (Hartley, Frank, and Goldenson, 1952), and indications of the beginning of concept formation (Ausubel, 1958; Hunt, 1961) all occur at about the same time—around four years of age. Awareness of one's own sex-identity would appear to be crucial for the conscious rejection of non-appropriate play objects. Certainly Rabban's (1950) data supports such an hypothesis. He finds consistently increasing sex-oriented limitations of toy choices with increase in awareness of own sex, from age three through age six.

The first limited, adult-imitative phase of female sex-role definition seems to come to a peak around five years of age (Brown, 1956; Fauls and Smith, 1956; Rabban, 1950). Both Rabban and Brown report a broadening of toy choices after five years, while Rabban also finds a decrease in the relationship between own-sex awareness and toy preference at eight years.

The sex-differentiating cognitions and implementations which define her sex-role for the eight-year-old girl, reported separately by Hartley (1961a) and by Sutton-Smith, Rosenberg, and Morgan (1961), indicate both continuity and change. The Hartley data,[1] based on primary cognitions, and gathered from 45 eight-year-old and 45 eleven-year-old girls, indicate that while the traditional houseplay toys are included in the female child's role, they are joined by many of the actual household *services* they represent. Helping mother hang clothes, caring for a baby, dusting, washing and drying dishes, clearing the table, going to get groceries are seen consensually (with significantly more than 50 percent of the girls agreeing) as activities girls engage in and that boys do not.

Between eight and eleven years there is no significant change in cognition in relation to these specific domestic items. The change from early childhood comes with the addition of activities that are specifically age-appropriate, as well as sex-related, and that are *independent* of traditional adult female sex-role activities. These include the addition of jacks, jump-rope and dancing lessons (from the Hartley data); likewise (from Sutton-Smith *et al.*) apparent broadening of imitative play to include other-than-home foci (store, church, actors, actresses), and more vigorous motor performances (skating, cartwheels)—as well as plethora of group games (farmer-in-the-dell, drop-the-handkerchief, etc.) that adults do not engage in.

A developmental view of female sex-role definition and identification

The Hartley data report two types of sex-role information: cognitions, indicating knowledge of what girls do (that boys do not); and preferences, which indicate what girls *like* to do. The Sutton-Smith *et al.* data report only implemented preferences. From a combination of the two groups of preference data, the following picture emerges. There is first of all a steadily increasing inclusivity of interest in every variety of *non-utilitarian* game, sport, and exercise of skill. Concurrently, there is a partial withdrawal of interest from "houseplay," sewing, cooking, knitting, and a variety of actual household tasks like washing dishes and emptying wastebaskets. At the same time, at eleven, there is greater rejection of certain traditionally masculine playthings, such as wagons, trucks and toy soldiers. Viewed broadly, the female sex-role definition of middle childhood maintains a specifically domestic core, while extending to include a wide variety of non-domestic activities of which most are also specific to an age status. This development suggests the reflection of multiple-role activity, with greater emphasis on a peer-group focus.

Some investigators have suggested a rejection of femininity during this period, but our material does not support such a view. Of all the activities consensually identified by our female subjects as being implemented by girls, none were consensually rejected. Of all the activities consensually identified as being implemented by boys, only one (playing with electric

[1]These data were collected in the course of a study supported by research grant M 959 (C, C-1, C-2, C-3) from the National Institute of Mental Health, U.S. Public Health Service.

trains) was given consensual preference by girls. Activities definitely recognized as male-appropriate tended to be *avoided,* not desired, by the majority of our female subjects (Hartley, 1961a).

This tendency was more pointedly illustrated by responses to selected items which we used, respectively, as female and male childhood role indicators. All of these were items which had been consensually assigned to the respective sexes by our child subjects and, further, selected by adult judges as behaviors "expected" of or "permitted" to children *specifically because of their sex.* Age-inappropriate items were discarded, leaving ten items for the female list and twenty items for the male list.[2] Summed preference scores unequivocally differentiated between the sexes ($p < .001$ for each "scale"), with the girls preferring the female role activities and rejecting the male role activities (see Tables 1 and 2). Even when some of the boys' items were "liked" by some of the girls, this did not indicate reciprocal rejection of own-sex activities. The correlation between scores attained by our 90 female subjects on the male and on the female child-role scale was virtually zero ($r = .10$).

These data emphasize the need to distinguish between historical trends and personal dynamics. While girls may now be doing more of those sort of things only boys were doing earlier (Sutton-Smith and Rosenberg, 1961), for each girl growing into a specific age-sex status currently, these items are clearly included within her cognitions of the female role. To her, such items do not indicate cross-sex-role intrusions.

The dynamics of the shift from the limited, domestic imitative focus of the preschool years to the broadly competitive and skill-centered later years need present no mystery. The imitative activity continues, with priority of the old models challenged by the introduction of new. As the child is forcibly separated from home by school, the focus of exposure is diluted —while new requirements for adjustment intensify the perceptual saliency of new models, both adult and child. At the same time continuing ego differentiation, with its implicit burden of awareness of self-limitations, forces awareness of similarity to other children even as it intensifies awareness of difference from adults. The child's ability to categorize, to distinguish parts from wholes, appearing close to the time of school entrance, would facilitate the simultaneous multiple classification needed to perceive accurately both similarities and differences related to sex-age statuses. Once this perception is achieved, it can become a basis for specified imitative behavior designed to emphasize differentiation from one category of beings (adults) and similarity to another (children).

One need only take into account the attraction of novelty, relative recency of exposure for many girls, the lack of inhibiting restrictions, and the newly developed priority of child-models (compared to adults) as an aspect of advanced ego-differentiation, to accept as logical the findings of Sutton-Smith *et al.* (1961) concerning third grade girls who show an increase in interest in playing Indians, cops and robbers, and other "immature" boyish games. The female peer-group esteem extended to daring and to motor skills is sufficient to reinforce these and to extend their manifestations. Historically these values may have had a basically masculine connotation; but to the school-age girl growing up today, they are simply

[2]Activities and role behaviors comprising the measure of preference for the Female Child Role were: (1) caring for baby when parents are away; (2) bringing mother something to drink; (3) washing dishes; (4) clearing table; (5) helping mother hang clothes; (6) drying dishes; (7) dusting table; (8) playing with toy sewing machine; (9) playing with toy electric mixer; and (10) playing with jump rope.

Those for the Male Child Role were: (1) playing on roofs; (2) playing on sidewalks; (3) playing in messy empty lots; (4) carrying wood into house; (5) being taken by man to ball game; (6) shoveling snow off walk; (7) helping man fix ceiling; (8) playing with little boy; (9) climbing trees; (10) hitching ride on back of truck; (11) playing with toy air-rifle; (12) playing with Erector set; (13) playing with electric train; (14) playing marbles; (15) playing with ball and bat; (16) playing with drums; (17) playing with toy truck; (18) playing with toy tool bench; (19) playing with toy fort and soldiers; and (20) playing with jack-knife.

TABLE 1. *Preference for Male Child Role: Differences between Matched Groups*

	COMBINED MEDIAN	NO. OF *S*s ABOVE MEDIAN	NO. OF *S*s BELOW MEDIAN	CHI-SQUARE
A. Sex Difference				
1. Male	11.83	25	7	30.72*
2. Female		3	29	
B. Age[a]				
1. 11-year-olds	7.10	12	16	.00
2. 8-year-olds		12	16	
C. Class[a]				
1. Upper-middle	7.25	7	13	.91
2. Lower-middle		11	9	
D. Maternal Work Status[a]				
1. Working Mother	7.17	8	12	.10
2. Non-working Mother		10	10	

[a] Female subjects only
* $p < .001$

part of the behavior of the admired own-sex model. As evidence of this point, an informal series of pilot interviews with preadolescents conducted in 1961 suggested that no girl today wants to be a "sissy." For girls the term has lost its sex-status connotation; it implies quite simply certain undesirable qualities of behavior.

I have been talking to this point as if sex-specific barriers to behavior do not exist for girls. Obviously, this is not true. The various reports of attempts to measure female sex-role behavior in childhood emphasize greater variability among girls than among boys, and increasing variability with age. This suggests more variation in the sex-role expectations encountered by individual girls than is the case with boys. Rabban (1950) has described the difference in degree of direction and restriction exercised by parents of upper and of lower economic groups on their children. Our own small family survey referred to earlier confirms his findings. From these, we would expect middle class girls to define their sex-roles much more broadly and inclusively than working class girls.

Our data (Hartley, 1961a), com-

TABLE 2. *Preference for Female Child Role: Differences between Matched Groups*

	COMBINED MEDIAN	NO. OF *S*s ABOVE MEDIAN	NO. OF *S*s BELOW MEDIAN	CHI-SQUARE
A. Sex				
1. Female	5.50	24	8	16.00*
2. Male		8	24	
B. Age[a]				
1. 11-year-olds	8.00	11	17	.29
2. 8-year-olds		14	16	
C. Class[a]				
1. Upper-middle	7.70	2	18	12.60*
2. Lower-middle		14	6	
D. Maternal Work Status[a]				
1. Working Mother	6.90	8	12	.00
2. Non-working Mother		9	11	

[a] Female subjects only
* $p < .001$

paring small matched groups of upper middle class and lower middle class girls ($N = 40$) do not support this hypothesis in general. Of 18 behavior items assigned by our total female sample ($N = 90$) consensually to girls, the upper middle class group claimed significantly greater sex-status exclusivity to two items (taking dancing lessons and playing with jacks) and disowned none. Of 22 items assigned by the total female sample to boys consensually, the upper middles differed from the lower middles significantly on only one item—climbing trees. The former saw this as something for both boys and girls, rather than for boys alone. In terms of primary cognitions, they differed little from the lower economic group.

If we consider *preferences,* however, the picture changes. On the female child-role measure mentioned earlier the upper middle group made significantly lower scores than the lower middle. They rejected significantly more often *washing and drying dishes; clearing the table; helping mother with the washing.* Other activities not included in the short measure, for which they showed significantly greater dislike were: *tidying a room; emptying wastebaskets; helping carry packages; protecting a frightened younger child; playing with toy dishes; playing with a toy carpet sweeper;* and *playing with a little boy.* They also showed significantly less liking for *playing in country fields* and *carrying wood into the house.*

What we see here seems to refer less to sex-role rejection than to rejection of *work-roles.* In terms of the activities we used, the upper middle class subjects seem to prefer a narrower range of activities than the lower economic group. It is highly likely, however, that what we are faced with is not literally a narrowing of role preference but an attitudinal forerunner of differential class-based, sex-role implementation.

Pertinent here may be Piaget's warning that imitative behavior occurs only when the models are esteemed and the behavior is both meaningful and perceived as related to the child's interests. It is a matter of general knowledge that domestic roles are differently implemented in different economic groups. Since our upper middle class girls tended to reject not only the tasks of domesticity, but the *toys* that represented them, we might infer that the domestic core of service activities were not as meaningfully present for them in early childhood as for the lower middle class girls. The activities marked perceptually by the women of whom the upper group were most meaningfully aware, may have been implemented in areas not sufficiently represented in our investigatory tools.

We do know that their secondary cognitions or attributed expectations (i.e., perceptions of preferences) of *adult* female roles follows a similar pattern, with significantly more dislike of traditional household tasks attributed to "most women" than is reflected by girls from less prosperous homes (Hartley, 1961b; 1961c). Since Komarovsky (1962) found dissatisfaction with domestic roles more characteristic of young college-trained females than of working class wives, this attribution is apparently both accurately reflective and predictive. What we seem to need now to fill in the picture are some *positives.* We know how upper middle class girls do *not* define their sex-roles —the detail of how they *do* define them and when and how the differentiation begins may have to wait on future studies specifically focussed on this end. Such studies should not be very difficult. For a start, carefully controlled observations of the content of the dramatic play of preschool girls from different socio-economic backgrounds might be helpful in clarifying the picture. The techniques described elsewhere (Hartley, 1959–60; 1961c) that we used for gathering the data on the secondary cognitions of school-age girls work well with five-year-olds, too. A comparatively small effort could fill a significant gap by extending our data downward in age. We also have interview data, not yet analyzed, from the mothers of our subjects which could show

illuminating differences in the patterns of daily living for the two socio-economic child groups. A little cooperative endeavor in this area at this time could yield high dividends.

In summary, three points deserve emphasis. First, sex-role differentiation takes place through a *variety* of highly complex processes, each of which contributes to a particular facet of status-related personality formation, perceptual sharpening, and response reinforcement. For females, significant class-based differences in definition seem to exist, starting early in life. Second, in relation to research approaches, it seems clear that secondary cognitions must parallel primary cognitions for meaningful data. Third, definitions of role must be referred to the subjects for valid interpretation of the meaning of any specific style of sex-role implementation.

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DIVERGENT FEEDBACK AND SEX-ROLE IDENTIFICATION IN BOYS AND MEN

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The purpose of this paper is to integrate into a theoretical framework those observations and findings concerning sex-role identification which are scattered in the literature. It is intended that this paper might suggest areas needing concentrated research and theoretical clarification. Specifically, it presents several hypotheses which are derived from a common observation, stated explicitly by Hartley, that the desired sex-role behavior for boys "is rarely defined positively as something the child *should* do, but rather negatively as something he should *not* do or be. . . . " (1959, p. 458). Hartley also points out that these demands are frequently reinforced harshly.

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Despite the fact that Hartley's observations are common ones, they are very difficult to verify or refute because of the paucity of research concerning specific sex-typing practices used by parents.

If it is true that the desired sex-role behavior for boys is seldom defined as "something the child *should* do, but rather negatively as something he should *not* do or be," the question arises as to what it *is* that boys are not supposed to do or be. Hartley and Hardesty (in press) found that boys were as sensitive to female roles as were girls themselves. This suggested to them that a "negative directive" plays a greater part in boys' sex-role identification than in girls', forcing an awareness of opposite-sex role activities in order to avoid them. Similarly, Emmerich (1959), from a doll play interview with children, was led to speculate that, as they mature, girls are learning how not to be babies and boys how not to be girls. Moreover, Sutton-Smith and Rosenberg (1961) found that over the past sixty years boys have been steadily lowering their preference for games that have anything to do with girl's play. These findings imply that masculine sex-role behavior is often defined negatively for boys as doing things which are not "girl-like," and that the male sex-role itself is defined as *being* "un-girl-like." However, much more research needs to be done to determine specifically what it is that parents and other influential persons do and say to encourage appropriate sex-role behavior in children.

When desired sex-role behavior is defined for the boy as something he should *not* do or be, he is being furnished *divergent feedback*. Divergent feedback is information indicating that the individual is *not* giving a desired response or progressing toward the correct goal, whereas convergent feedback is information indicating that the individual *is* giving a correct response or progressing toward the desired goal.

Hovland (1952) demonstrated that it often takes more negative instances than positive instances to provide the

same information in concept formation tasks. Moreover, Hovland and Weiss (1953) equated for the amount of information provided by positive and negative instances, and found that even under these conditions more *S*s still attained the correct concept when it was transmitted by all-positive instances than by all-negative instances. If it is true that the desired sex-role behavior is usually defined for boys through divergent feedback, the studies reviewed above suggest that the male is taught his sex-role by an especially ineffective method.

Hartley (1959) observed that demands on boys for appropriate sex-role behavior are often reinforced by punishment. With that in mind, let us explore the consequences of punishment as contrasted with reward in controlling behavior.

Hilgard (1962) presented the following arguments against punishment as a desirable means of controlling behavior:

1. The results of punishment are not as predictable as the results of reward. Reward suggests that you repeat what you have done; punishment merely suggests that you discontinue what you were doing, but fails to tell what you should do. Furthermore, punishment may simply result in emotional upset.

2. The results of punishment are thought to be less permanent than the results of reward. Performance may be disrupted without changing the underlying learning. Punishment may merely suppress behavior through emotion, but not cause its unlearning. Response tendencies may be inhibited and remain active in indirect or disguised forms because they are not unlearned. Punishment may, in short, result in the repression of response tendencies rather than result in their unlearning. Thus, to the extent that this principle is applicable, one might predict that males will repress inappropriate sex-role behavior rather than unlearn it. One might expect in males to find indirect or disguised evidence of feminine sex-role identification, even though there is appropriate sex-role preference.

3. Punishment often leads to dislike of the punishing person and to dislike of the activity that led to punishment. The implication of this principle of most importance to this paper is that the boy will be expected to develop hostile feelings toward the activity that led to the punishment; viz. the "girl-like" activity he was engaging in which brought about the punishment. It is reasonable to assume that the boy will also generalize and develop hostilities toward females who represent this disliked role (Hartley, 1959).

Hypotheses

The following hypotheses are considered to follow from the above formulation:

1. Males, but not females, must shift from initial identification with the mother to masculine-role identification. It has been observed that demands for appropriate sex-role behavior are made at an earlier age for boys than for girls. These demands are made at an age when boys are least able to understand them. They are frequently made by women in the absence of a readily available male model to demonstrate the appropriate sex-role behavior. Such demands are often presented in the form of punishing divergent feedback. Studies were reviewed above which suggest that divergent feedback and punishment are poor methods of inducing learning. *Therefore, males will tend to have greater difficulty in achieving sex-role identification than females.*

2. Divergent feedback in and of itself is postulated to produce incongruity, which results in anxiety until the incongruity or dissonance is reduced (Festinger, 1957; Hunt, 1960). Demands on boys for appropriate sex-role behavior are thought to be in the form of divergent feedback at an age when they are least able to understand them. Therefore, it is difficult for the resulting incongruity or dissonance to be reduced. Punishment also leads to anxiety, and it has been observed that both divergent feedback and punishment are frequently used in attempting to produce appropriate sex-role behavior in

boys. In Hartley's words: "This situation gives us practically a perfect combination for inducing anxiety—the demand that the child do something which is not clearly defined to him, based on reasons he cannot possibly appreciate, and enforced with threats, punishments and anger by those who are close to him" (Hartley, 1959, p. 458). *Consequently, males are more anxious regarding their sex-role identification than females.*

3. It was postulated that punishment often leads to dislike of the activity that led to punishment. Since it is girl-like activities that provoked the punishment administered in an effort to induce sex-appropriate behavior in boys, then, in developing dislike for the activity which led to such punishment, boys should develop dislike for girl-like activities. Boys would be expected to generalize and consequently develop hostility toward females who represent this disliked role. No similar processes are postulated for females. There is not thought to be the pressure on girls that there is on boys to avoid opposite-sex activities. It is assumed that girls are neither punished so early nor so severely for adopting masculine sex-role behavior. *Therefore, males will tend to hold stronger feelings of hostility toward females than females toward males.*

4. Punishment may suppress behavior without causing its unlearning. Response tendencies may be repressed and remain active in indirect or disguised forms because they are not unlearned. Thus, one might predict that males will repress inappropriate sex-role behavior rather than unlearn it. One might predict, then, a discrepancy between the underlying sex-role identification and the overt sex-role behavior of males. For females, on the other hand, no comparable punishment for adopting many aspects of the opposite sex-role is postulated. In addition, much prestige and many privileges are thought to be accorded males but not females; so that the girl, as she grows older, might be expected to prefer aspects of this prestigeful role. *Consequently, where a discrepancy exists between sex-role preference and sex-role identification it will tend to be as follows: Males will tend to show same-sex-role preference with underlying opposite-sex-role identification. Females will tend to show opposite-sex-role preference with underlying same-sex-role identification.*

Relevant Findings

Hypothesis 1, predicting that males will tend to have greater difficulty in achieving sex-role identification than females, is supported by DeLucia's study (1960) of five- and six-year-old children to determine the effects of verbal reinforcement on the choice of pictures of "masculine" or "feminine" toys. From the findings, DeLucia suggested that the identification of girls is more stable than that of boys in this age range because of the amount and direction of change from the pretest to the posttest.

Additional support for the prediction that males will tend to have greater difficulty in achieving sex-role identification than females is found in a study of conscience by Sears *et al.* (1957), and in a follow-up study by Grinder (1962). The development of conscience is assumed to reflect appropriate identification development. These findings can be thought of as supporting the hypothesis that males will have more difficulty in establishing identification than females, in that it took the males longer to establish a comparable level of conscience.

A previous paper of the writer's (1961) suggested that the greater proportion of psychological disturbances at an early age for males than for females may reflect the greater difficulty of the male in establishing identification. In that same paper the writer also suggested that the greater proportion of male than female homosexuals may, to some extent, reflect the failure of males to achieve same-sex identification.

Thus, the studies reviewed above are consistent with hypothesis 1 that males will tend to have greater difficulty in achieving sex-role identification than females.

Hartley's study referred to previously (1959), in which she interviewed 41 eight- and eleven-year-old boys, is relevant to hypothesis 2, predicting that males are more anxious regarding their sex-role identification than females. She found that "a great many boys do give evidence of anxiety centered in the whole area of sex-connected role behaviors, an anxiety which frequently expresses itself in overstraining to be masculine, in virtual panic at being caught doing anything traditionally defined as feminine . . ." (Hartley, 1959, p. 458). Her study, however, did not actually compare males and females concerning anxiety over sex-roles. Kagan and Lemkin (1960), in a study of the child's differential perception of parental attributes found that girls stated a desire to be like the mother, but perceived the father as wiser and stronger. From this they inferred that the girl's identification must be an anxiety-arousing one, because their identification model is perceived as the least competent of the two parents. The whole area of anxiety over sex-role identification is one which needs a great deal more research.

The same study by Hartley referred to above (1959) also supports hypothesis 3, indicating that males will tend to hold stronger feelings of hostility toward females than females toward males. Hartley found that the males frequently expressed "hostility toward anything even hinting at 'femininity,' including females themselves" (p. 458). As stated above, this study did not actually compare the responses of males and females. Kagan and Lemkin's study (1960) gave no evidence to support this hypothesis. For example, in response to a picture where the child was described as mad at someone, boys showed no significant difference between mother and father answers, while girls responded "father" significantly more often than "mother." Hypothesis 3 might have led to an opposite prediction, since it states that males will tend to hold stronger feelings of hostility toward females (mother) than females toward males (father). However, it might be argued that peer group attitudes and those toward parents have very different meanings. Is the girl responding to the picture of the father as father or as male? The whole problem of hostility toward the opposite sex needs much more exploration.

Divergent feedback and sex-role identification in boys and men

Hypothesis 4 predicted that where a discrepancy exists males will tend to show same-sex-role preference with underlying opposite-sex-role identification, whereas females will tend to show opposite-sex-role preference with underlying same-sex-role identification.

Indirect evidence to suggest the underlying feminine identification in males where masculine sex-role preference is indicated comes from the previously reported findings by DeLucia (1960). In that study boys were unable to maintain their initial sex-role preference scores in a picture preference test, unless they received a combination of reward for correct responses followed by punishment for incorrect ones, or unless a female experimenter rewarded them. Without these conditions (as in the control group and in the reward treatment by a male experimenter) they were unable to maintain their original sex-appropriate preference scores. This suggests that the masculine preference pattern of these boys was tenuous because of underlying inadequate masculine identification.

There is a marked discrepancy between measures of father-identification and masculine-role preference. Gray and Klaus (1956) did a study using responses to the Allport-Vernon-Lindzey Study of Values and found much more similarity between the women and their mothers than between men and their fathers, both as tested and as perceived. Lazowick (1955) obtained similar results. Despite the lack of father-identification in college males as contrasted with mother-identification in females, the studies of sex-role preference in adults show a very different picture. When men and women were asked whether they had ever wished to belong to the opposite sex, below 5 percent of adult males as contrasted to as high as 31 percent of adult females recall

consciously having been aware of the desire to be of the opposite sex (Fortune Survey, 1946; Gallup, 1955; Terman, 1938).

Thus, in general, the research reviewed supports the hypothesis that, where a discrepancy exists, males will tend to show same-sex-role preference with underlying opposite-sex-role identification, whereas females will tend to show opposite-sex-role preference with underlying same-sex-role identification.

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SUGGESTIONS FOR FURTHER READING

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9

THE CHILD AND HIS PEERS

The peer group as an agency of socialization has received far less attention than the family. The traditional focus on parent-child relationships has obscured the importance of other influences. Nevertheless, peer-group relations are significant for various reasons. Once a child enters school, his personality develops chiefly within the context of his peers. His backyard, his playground, and his neighborhood constitute his own mini-world within the larger world he shares with older siblings, parents, and teachers. The group serves as his mirror, reflecting how well or poorly he functions as an individual in the swing-six set. Hence the child is generally well aware of his own status in the peer group (Ausubel et al., 1952). Moreover, the way he sees himself is related to the way other children see him. In one study, children with high status were much less likely than less popular children to desire to be someone else (Coleman, 1961).

Peer groups also help shape a child's values and attitudes. For instance, Coleman (1961) reported that the social climate of high-school peer groups rubs off on its members. In a private school with a seriously oriented university setting, freshmen attributed as much importance to good looks as a mark of status as did freshmen in other high schools. But in the next four years, students in the private school attached sharply decreasing importance to good looks while those in the other school continued to regard appearance much the same as before.

The nature of peer-group influence varies with such factors as age and sex. The peer group reinforces sex-appropriate behaviors, and the child who fails to follow appropriate sex behaviors is rejected (Marshall, 1961). In playing house the girl rehearses the grown-up mother role while her brother has his gang, the small-boy syndicate. Both sexes experience greater influence by the peer group, and correspondingly less by the family, as they move from childhood into adolescence (Wright, 1956).

The family significantly influences the child's peer relationships. Parents control the child's contacts and subtly indoctrinate him with attitudes that will determine his choice of friends. If a parent is missing, the child's peer relations may suffer. For example, Norwegian boys whose sailor fathers were absent nine or more months of the year indicated greater-than-normal difficulty in social adjustment (Lynn & Sawrey, 1959). Sibling relations are significant, too, for children's sibling and peer relationships parallel each other. For instance, first-born children are more likely than second-borns to choose playmates younger than themselves (Koch, 1957).

Especially significant modifiers of peer relationships are culture and subculture. Even young children are aware of differences in ethnic and social status; however, there is conflicting evidence on the effects of such recognition. Recognition is accompanied by racial, and to a moderate degree ethnic, cleavage but at what age is unclear. The effect of social class is no less important. Children of different social classes spend their time differently, even within the same neighborhood (MacDonald et al., 1949).

Cross-cultural comparisons are even more striking. In America, reported one study, members of the trend-setting groups of adolescents seemed socially inclined; in Europe, they seemed intellectually inclined. Another study revealed that American peer groups were less institutionalized than Israeli or Russian peer groups, but that their influence was nevertheless important. In a third study, Chinese-American youths of Chicago proved far more subservient to their peers than did Chinese youths in Hawaii. The results suggest that the more typically American peer culture of Chicago enhances the peer influence (Hsu et al., 1960–61). Even within the same geographic area, subcultural variations in peer-group processes and influence exist.

Few societies have consciously used the peer group in socialization processes. Exceptions are found in the Israeli **kibbutz**, where children's peer-group influence is especially intensified, and in Russia, where children's groups play a key role in education. In such societies, the group is developed as a frame of reference for evaluating behavior. Desired behaviors are motivated through competitions between groups; rewards or punishments are dispensed to winning groups, not to specific children (Bronfenbrenner, 1962).

Within any culture, the interplay of forces in children's groups is complex. Setting is especially important; for example, children's classroom behavior in the kibbutz is highly informal, presumably because the dormitory and classroom building are one and the same (Spiro, 1958). Whatever the situation, some children are more susceptible to group influence and persuasion than others. Younger children and girls tend to be more conforming than their opposites (Patel & Gordon, 1960). Children also vary in their power, influence, and popularity with others. Many factors determining a child's influence are obvious, such as athletic skill or independence of adults. Others are less obvious; for instance, an impulsive child or less popular child may trigger group action under certain circumstances (Polansky et al., 1950).

In any children's group, the presence of an adult makes itself felt. In one amusing study, a teacher praised only children seated in odd numbered seats. Subsequently, the praised children received more **sociometric** choices than the unpraised children (Flanders & Havumaki, 1960). In another study, of preadolescent campers, adult leaders strongly influenced children's reactions within settings involving racial desegregation (Yarrow & Yarrow, 1958).

One unresolved question is this: Does the child respond more to the influence of peer or adult? The evidence is conflicting, with many studies favoring the peer group. Berenda (1950) reported that children yield more readily to the judgment of a majority of their peers than to that of their teacher. However, other evidence would indicate greater influence of the significant adult. In one extensive study, adolescents said they would not join a particular club if their parents disapproved. Anyhow, children generally choose friends in terms of values acquired from their parents (Westley & Elkin, 1956). We should note, however, that adults' influence as compared with peers' is relatively greater on girls than on boys. In a poll of a freshman high school class, reported in the February 1951 issue of *McCall's Magazine,* 45 percent of the boys and 31 percent of the girls objected to parents' interference in their affairs.

Researchers have shown interest in the peer group at least since the turn of the century; and during the late 1920s and 1930s such studies began to proliferate. Much of this early work was sociological in nature and focused on gangs. But as peer-group research increased, it began to include studies of group rivalry, friendship choices, and social roles. Until the late 1930s most such studies were fragmentary and devoid of substantial theoretical basis; but in the 1930s, more meaningful studies appeared, especially those concerned with the dynamics of children's social behaviors. During this period Lippitt and White, under the direction of Kurt Lewin, tried out different sorts of leadership on clubs of 11-year-old boys. This study, which proved a landmark in small-group research, compared authoritarian, democratic, and laissez-faire leadership in a real-life group setting. It was especially significant in its application of the experimental approach to a realistic social situation.

Techniques for studying children's groups became increasingly sophisticated. Moreno (1934) devised the sociometric technique, in which children indicate which members of the group they would prefer for companions in particular situations, the patterns of choice revealing interpersonal relationships within the group. In the years following, theory and research have involved refinements of earlier work, rather than new approaches.

In sum, much worthwhile research in this area exists, but much remains to be done. Some areas have hardly been tapped at all. For instance, little research has related changes in children's peer-group processes to shifts in broader social change. Still missing are adequate descriptions of the activities and way of life of child peer groups. The gap must also be bridged between laboratory and natural settings, and between theory and practice. When the time comes that a substantial body of data exists, it should prove helpful in many ways. Adults need help in getting the child's-eye view, because children's groups tend to be closed corporations.

The first article in this section, by Gump, Schoggen and Redl, is one of various ecological studies that have been done to determine the effect of environmental settings on behavior. In this study, the authors investigate the common assumption that a change of milieu will produce a new way of life for a child. It tells how a day at camp was both similar and different from a day at home in the life of nine-year-old Wally O'Neill. This sort of study also illustrates current attempts to examine social behavior under natural rather than artificial conditions. Paul V. Gump is Associate Professor of Psychology at the University of Kansas; Phil Schoggen is Associate Professor of Psychology at the University of Oregon; Fritz Redl is Professor of Behavioral Sciences at Wayne State University.

The second article, by Dr. Harriet L. Rheingold, Professor of Psychology at the University of North Carolina and an internationally known authority on infancy and maternal care, considers the development of social behavior in infants. She treats infants as interacting creatures, rather than as merely passive recipients of whatever stimuli impinge upon them. Her study reflects the current emphasis on social behaviors as dynamic, interactional processes.

THE BEHAVIOR OF THE SAME CHILD IN DIFFERENT MILIEUS

PAUL V. GUMP, PHIL SCHOGGEN, AND FRITZ REDL

The Problem

The basic research from which this study was derived investigated the psychological impact of recreational activities upon children. The aim of that research project was to identify and describe certain psychologically relevant characteristics of common recreational offerings, e.g., crafts, swims, cook-outs, games, and to discover relationships between these characteristics and the behavior of children who participate in the activities. Results of these studies demonstrated that behavior of children is markedly and differentially affected by the activities in which they are placed (Gump, Schoggen & Redl, 1957; Gump & Sutton-Smith, 1955a; Gump & Sutton-Smith, 1955b; Millen, 1958). However, such studies necessarily gave a fragmentary picture. It became of interest to know how a series of activities—a more nearly total activity environment—would affect behavior, and it became a special concern to learn how behavior in a special child-centered milieu would differ from behavior occurring in the more usual home-neighborhood setting. It was decided to study a child-centered environment that is common in our culture, namely, a summer camp. The general problem was: What is the impact of camp upon the behavior of a camper?

Abridged from "The Behavior of the Same Child in Different Milieus," pp. 169–171, 196–202; *The Stream of Behavior,* ed. Roger G. Barker. Copyright © 1963 by Meredith Publishing Company. Reprinted by permission of Appleton-Century-Crofts.

A detailed record was made of the life of one boy on a typical day at camp, and a similar record was made of a typical day of the camper in his home.

The purposes of the study were the following:

1. To compare, on some important dimensions, camp behavior with behavior at home.

2. To relate these differences in behavior to some known differences in the two living situations.

3. To develop concepts and measures which may be of value in determining the nature and behavioral effects of other special environments for children; e.g., residential treatment homes, detention homes, special living-in schools.

One assumption behind the study has been that many questions about the impact of camp, or of any environment, upon children can be answered most adequately and certainly by a direct approach. This direct approach involves actually observing and recording what is done for and to children and what children do in response.

The Method

Subject

Wally O'Neill, a nine-year-old camper, was the subject chosen for the study. Wally O'Neill was the oldest of five children. His father was a maintenance worker for the County Construction Agency. The family was a stable one in the upper lower-income group. Wally had some emotional problems, as did most of the other boys in camp. He had been a regular client of a publicly supported counseling center for more than a year. His problems did not result in behavior which greatly concerned camp personnel. Although he was sometimes more tentative in his responses than other boys his age, he was looked upon by camp people as better adjusted than many other campers. Wally's case-worker felt that a camping experience might be of value to Wally. The present study is an attempt to determine what the camp milieu, as rep-

resented by a one-day slice, actually did to and for Wally as compared to his home environment.

Milieus

The first milieu was University Boys' Camp, a camp for boys whose adjustment was such that attendance at a regular camp might not be beneficial. The nature of this camp is described elsewhere. . . . It is only necessary to report here that, in matters of program and environment, the camp was reasonably typical of camps in general. Exceptions were the absence of competitive activities at University Boys' Camp, and therapeutic handling of adjustment difficulties.

The second milieu was Wally's home and neighborhood. . . . Wally lived in a modest, three-bedroom frame house on a busy residential street in the suburb of a large city. There were two public parks within walking distance of home, but shopping centers were usually reached by car.

Data Collection

Two day-long specimen records of Wally's behavior and situation were made. . . . One record was made during a typical day at University Boys' Camp, the other was made ten days later at Wally's home. In making these two records, the observing and recording was done according to procedures described by Barker and Wright (1955, Ch. 6). Trained observers, working in half-hour intervals, made continuous and detailed records of what Wally did and said, and what was done and said to him; they sought to describe accurately and completely and in ordinary, nontechnical language the boy's behavior and situation.

It is important to emphasize that these records do not constitute a type of case study. Wally O'Neill's days at camp and at home were recorded in order to compare the impact of two environments, not to understand the personality of a particular child. The situations and events in these two days and Wally's response to them served as basic data for measurements of the effects of the camp and home milieus.

Data Analysis—A Preview

Once a day-record has been made, the problem arises as to what kind of unit to use in its description. The unit employed was the episode, a unit already developed and described in detail. . . . Briefly, an episode is a unit of behavior which (1) occurs within the normal behavior perspective of the behaving person, and (2) is characterized by constancy of direction, i.e., the behavior is directed toward a single, particular goal. These episodes, over 1,000 in each day, served as basic units. They were described in terms of a variety of characteristics: play form, nature of social interaction, behavior initiation, and emotional tone. Determination of the frequency with which episodes of a given kind occurred made possible a quantitative description of each day. Such quantitative descriptions of each specimen record were then compared, resulting in a quantitative statement of similarities and differences between Wally's day at camp and his day at home.

Such, in brief, was the method of data analysis used for the study; complete definitions of the coding categories and analytical procedures for episode attributes concerned with play, social interaction, type of initiation, and emotionality will be offered as they become relevant in the report. . . .

Behavior Stimulation at Camp and Home

The descriptions of Wally's play and sociality have dealt with kinds of associates and kinds of behavior. It is also possible to investigate the manner in which the behavior episodes were started and the emotional reaction occurring during them. Such an approach ignores specific acts, events, or persons, and deals with the classes of beginnings and types of emotional "backlash."

Initiation of Episodes

Observation of behavior leads to the inference that new activity may start with apparent spontaneity, or may be stimulated from without. Among the epi-

sodes of behavior initiated by outside stimulation, it is possible to distinguish between those coerced by the environment and those invited by the environment.

The code describing these various behavior initiations was developed by Barker and Wright (1955, pp. 279–280). An abbreviated explanation of the categories is offered below:

Spontaneous: A subject behaves as if he "just happened to think of it." Wally remarks to a peer: "Let's go back to the tree hut."

Instigated: A subject responds to some change or event in his situation, but not because of coercion. Wally suddenly comes upon a leaf magically swaying in midair. (The leaf is really dangling at the end of an invisible spider thread.) Wally begins to explore this mystery.

Pressured: The subject is put under external influence (usually social) to behave in contrast to his present wishes. Wally, after his counselor insists, grudgingly apologizes to a cabinmate.

Cannot Judge: Ambiguous, not sufficient information, etc.

Certain effects of situations upon a person can be assessed by comparing the relative proportion of episode initiation types within the situations. A sample of a person's episodes with a large percentage of *pressured* initiations means that he was heavily coerced by the situations in which the episodes occurred; many *spontaneous* episodes indicate that considerable freedom of action obtained; a preponderance of instigated episodes reveals much environmental invitation.

The positive connotations of the term "spontaneous" should not lead to the inference that the more frequently the episodes are spontaneous, the more optimal is the situation. Sparse, unstimulating environments would yield more spontaneous episodes and fewer instigated episodes. Since camp was especially designed to be a stimulating and noncoercive setting for children, it might be expected that camp, as compared to home, would show more episodes coded as Instigated and fewer as Pressured and Spontaneous.

TABLE 1. *Number of Episodes in Different Initiation Categories at Camp and Home*

	CAMP		HOME		
CATEGORY	N	%	N	%	DIFF. IN %
Spontaneous	441	41.8	484	47.6	−5.8
Instigated	530	50.3	448	44.1	+6.2
Pressured	50	4.7	57	5.6	−0.9
Cannot Judge	33	3.1	27	2.7	+1.4

Chi square = 8.71, $p < .02$

The behavior of the same child in different milieus

It is clear from Table 1 that pressured initiations were relatively infrequent on both days and that there was no significant difference between camp and home in this respect. However, the expected high proportion of instigated episodes at camp is confirmed. There were 82 more instigated episodes at camp than at home and 43 more spontaneous episodes at home than at camp. Since more of Wally's behavior units at camp started from changes in the environment, it would appear that this milieu was more stimulating than the home milieu.

Emotional Tone of Episodes

What were Wally's feelings within the episodes that have been identified in his behavior stream? Was he happy or unhappy, calm or excited? Since the camp was established as a place for children to have fun, one might expect to find more excitement and more positive reactions there.

The measure of emotionality employed was the following six-point satisfaction-dissatisfaction scale, plus a category for ambivalence.

Unusually Positive: High pleasure, hilarity, full joy

Strongly Positive: Marked satisfaction, considerable pleasure

Mildly Positive: Mild pleasure, muted fun

Neutral: No clear, consistent signs of emotion

Mildly Negative: Mild dissatisfaction, irritation

Strongly Negative: Marked dissatisfaction, anger, disappointment

Unusually Negative: Severe pain, rage, or sorrow

Markedly Ambivalent: Strong satisfaction *and* dissatisfaction in the same episode

Coding of emotional tone was based upon manifest cues: smiles, frowns, statements of triumph or discouragement. Doubtless many episodes coded as neutral were experienced by Wally as satisfactory or unsatisfactory. However, in the interests of reliability, coders did not attempt to infer emotionality when overt behavioral signs were missing. Reliability of the code was 87 percent. Results of the coding are given in Table 2.

TABLE 2. *Distribution of Episodes at Camp and Home by Emotionality Categories*

CATEGORY	CAMP	HOME
Unusually Positive	2	0
Strongly Positive	23	15
Mildly Positive	171	160
Neutral	723	723
Mildly Negative	88	91
Strongly Negative	21	14
Unusually Negative	6	0
Markedly Ambivalent	14	7
Cannot Judge	6	6

Chi square = 8.602, $p < .15$

Emotionality shows roughly the same pattern on the two days ($p < .15$); there was a tendency for camp to produce more of the Unusually and Strongly positives and negatives and more of the Ambivalent reactions. Although none of the categories of strong emotionality showed statistically significant differences when taken separately, each comparison tended in the direction of stronger emotionality at camp. There were a total 66 of these strongly emotional episodes at camp and only 36 at home. The percentages were 6.3 vs. 3.5 ($p < .01$).

Singling out the more emotional episodes for comparison may be a questionable procedure. It was decided to check on the trend of increased emotionality at camp by using the episode time as the measure of extent of emotionality. It was found that, at camp, Wally spent 171 minutes in episodes of marked emotionality; at home, 70 minutes ($p < .001$).

The stronger emotionality at camp was related to certain factors in that environment. This assertion is based on an inspection and qualitative analysis of all strongly emotional episodes at camp and at home. Strong negative emotionality occurred in 27 camp episodes and in 14 home episodes. The more numerous episodes at camp came about primarily from difficulty with peers and involved 21 cases of anger and frustration. At home, strong anger and frustrations with children occurred only seven times. It might be hypothesized that competitiveness and combat are more likely among peers than among children of heterogeneous power. Camp provided more peers of relatively equal power, and this resulted in more combativeness, and more angry emotional reactions. In this connection, it should be recalled that intense aggression by others was more frequent at camp. . . .

A further difference in Wally's emotional behavior on the two days relates to fear-disgust reactions occurring in the woods at camp. Wally's reaction to bugs, swamps, and decaying bark was usually strong and ambivalent; he showed "horrible fascination." Wally had eight disgust-fear episodes at camp, none at home. Six of the eight disgust-fear episodes related to the woods; such natural supports for disgust and "horrible fascination" simply did not occur frequently in Wally's suburban, cleaned-up neighborhood.

The distinguishing feature of highly positive emotion at camp was the amount of fun related to the exploration, hunting, and war games made possible by the woods and its tree hut. Nine such highly positive and "adventurous" episodes occurred at camp, none at home. On the other hand, home was distinctive for its support of short but gleeful satisfaction in observation of defeats and triumphs of others in competitive games (carrom board games and street baseball); six such episodes occurred at home, none at camp.

Summary

Adults often send a child to camp because they believe that life in this milieu will be different from life in the child's home and neighborhood. Furthermore, these adults presume that some of the differences at camp are positive. The present research recorded a full day's behavior of one boy, Wally O'Neill, at camp and an-

other full day of his behavior at home. By dividing these records into units (episodes) and by classifying and rating the units, it was possible to make a quantitative comparison of the boy's behavior and experience in the two milieus.

Findings and Relationships

The major results of the investigation can be divided into three areas. First there are the general environmental factors which impinged upon Wally; these included variety of behavior settings and types of associates. A second area, pertinent to social interaction, refers to how other persons behaved toward Wally, i.e., the particular social actions actually received by the subject. A third area is Wally's behavior in the context of the general and specific environmental factors. Rather than listing the differences occurring between home and camp and then discussing the relationships, the findings and their relationships will be considered together.

On the camp day, Wally entered a wide variety of behavior settings, many of which were explicitly child- or play-centered; he behaved in a craft shop, a woods (with its tree hut), a swimming area, a cook-out, and an Indian Council fire. At home, Wally entered a narrow variety of behavior settings few of which were specifically designed for children's play. Wally's response to these differences in general environmental factors was to engage in active, exploratory, constructive, and dramatic play at camp and in passive (several hours of TV watching), dallying and formally competitive play at home.

Differences in the settings were also related to aspects of Wally's emotionality on the two days. More strongly positive and more ambivalent emotionality occurred at camp than at home, mostly as a consequence of the challenges and dangers in the camp-setting woods.

Wally's camp associates included many contactable adults, many peers and few nonpeer children. This difference in types of associate would appear to be related to the second and third areas of results: Wally's treatment by others, and his behavior toward them.

The behavior of the same child in different milieus

Camp adults, as compared to those at home, extended to Wally more frequent, more interest-centered, less aggressive and less resistant social behaviors. It might be speculated that this difference in adults' treatment of Wally was related to the roles taken by the adults. Camp adults, by training or by reality-defined function, were able to maintain other than parental roles toward campers. Wally's response to this difference in adult social behavior was to deal more frequently with camp adults and to show them less parent-centered and less submissive behavior.

Children at camp treated Wally differently from children at home. The fact that most child associates at camp were peers is probably a source of the finding that more equalitarian social relationships developed at camp. It will be recalled that, at home, younger siblings submitted and appealed to Wally while neighborhood children were much more dominating and aggressive toward him. Wally, in turn was dominating toward siblings but submissive toward neighborhood children. No child campers maintained a consistently dominant relationship toward Wally. Camp associates were occasionally sharply aggressive toward Wally. He responded to their aggression with frustration and anger; these feelings were behind the increase in strong negative emotionality at camp.

To balance the presentation of Wally's behavior and experience on the two days, it is necessary to point out similarities as well as differences. For example, Wally attempted a somewhat similar play pattern on both days: although time spent in various play forms was quite dissimilar at camp and at home, passive watching and dramatic play were frequently attempted on both days. One might speculate that Wally's personal needs and habits determined the attempts, but that ecological supports determined the duration of these attempts.

In certain respects, relationships with adults and children were also similar. At camp and home, adults dominated and nurtured, and Wally submitted or appealed. The over-all interaction patterns with children were similar at camp and home; it was only when the home associates were divided between siblings and neighborhood children that the differences in child interaction were clear. Finally, when he could, Wally dominated weaker youngsters. At home, the environment offered more support to this tendency, but, when the opportunity existed at camp, Wally exploited it, as in Wally's dominance over the fat boys.

To a certain extent behavioral similarities were probably a result of environmental similarities on the two days. For example, adults who take care of children behave with some similarity even in milieus as contrasting as camp and home; and a child responds to such adults in a somewhat similar fashion in both environments. It is also reasonable to suppose that Wally's personality determined some of the similarity in play pattern and in over-all reactions with children. For example, Wally's typical adjustment to his own aggressive impulses and to the anxiety these impulses stimulated can be inferred from the play forms Watching and Dramatic Play, and from his social behavior. Much of Wally's camp watching was directed toward the conflicts between campers; much of home watching was related to competitive encounters between other children in games, or to cowboy and war conflict on television. Watching was often a pleasurable but completely safe way to experience aggressive or competitive issues. More expressive, but still indirect, assertion was managed by the dramatic play. Direct domination of others was reserved for those situations in which Wally had a clear power superiority: for cabin scapegoats at camp and for younger brothers and sisters at home.

Problems and Prospects

This investigation has been an attempt to study environmental effects by recording and analyzing naturally occurring behavior in contrasting milieus. Differences in one subject's behavior have been described and related to differences in environmental supports and coercions. It would appear that the differences in Wally's behavior and experience displayed in his play, social interactions, and emotionality reflected differences in milieu. Other environments for children can be similarly assessed by a direct look at the behavior occurring in these milieus. We might expect that the types of behavior settings and associates provided would be particularly coercive in shaping behavior.

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THE DEVELOPMENT OF SOCIAL BEHAVIOR IN THE HUMAN INFANT

HARRIET L. RHEINGOLD

The assignment to write a paper often forces one to search for some system by which to organize what one thinks important on the given topic. Thus, in a recent paper (Rheingold, in press) I proposed four general principles of behavior under which the facts and current theories about human infancy could be organized. The principles were (1) that the infant is responsive to stimulation; (2) that the infant is an active organism; (3) that the infant's behavior is modifiable; and (4) that the infant in turn modifies the environment, particularly the social environment. The principles, it is obvious, apply to the behavior of older as well as younger organisms and to the behavior of one species as well as another. That they also apply to the behavior of the infant testifies to their generality. As a consequence, developmental psychology may be integrated with a more comprehensive science of behavior.

In the present paper, the same four principles will be used but now applied to the development of *social* behavior in the infant. Although the development of social behavior in the human infant will be the primary focus of attention, some data on the development of social behavior in a few other mammalian species will be included. A complete comparative psychology of the development of social behavior will not result, but the form it could take will be suggested.

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The development of social behavior in the human infant

The advantages of a comparative approach are several: It provides a wider and more objective theater for viewing the behavior of the human infant. It supplies a corrective for inexact generalizations from animal to man. It serves, also, to bring knowledge about man's behavior into closer association with knowledge about the behavior of his mammalian relatives.

A few definitions at this point may remove some later ambiguities. *Infancy* is a period of time in the life of an organism; its origin is plain, but its termination is without firm criteria. In the human infant, I have elsewhere proposed (Rheingold, in press) that the use of words to indicate simple wants could serve as such a criterion. In many mammals, the time when the infant leaves its mother suggests itself as a possible criterion but, obviously, not an appropriate one for the ungulates.

The term "development" will cause us no trouble. For me, it is a descriptive, not an explanatory, concept, and as such I find most definitions acceptable. A particularly congenial definition, however, is Nagel's (1957), given 10 years ago at the thirtieth anniversary of the Institute: "The connotation of *development* thus involves two essential components: the notion of a system possessing a definite structure and a definite set of pre-existing capacities; and the notion of a sequential set of changes in the system, yielding relatively permanent but novel increments not only in its structure but in its modes of operation as well" (p. 17).

We will not tarry long, either, over a definition of social behavior. It is behavior that is evoked, maintained, and modified by the presence or behavior of another organism, usually by a member of

one's own species. Social stimuli, those provided by these organisms, differ from inanimate stimuli in more than origin; they are often more responsive and more unpredictable (Krech and Crutchfield, 1948, p. 9), more variable, more flexible, and more likely to be intermittent (Skinner, 1953, p. 299).

To conclude this introduction, it needs only to be remarked that all mammalian infants, by virtue of their means of obtaining nourishment, are born into a social environment.

The four principles stated earlier, revised for the present purpose, may now be presented as follows:

1. The infant is responsive to stimuli arising from social objects.
2. The infant is active in initiating social contacts.
3. The infant's social behavior is modified by the responses of others (social objects) to him.
4. The infant's social responses modify the behavior of others in his group.

The Infant Is Responsive to Social Stimuli

The infant's sensitivities determine the stimuli arising from social objects to which he can respond; his capabilities determine the responses he can make to these stimuli. The task here is to enumerate both the sensory systems of the infant that are stimulated by the presence and behavior of other members of his group, and the responses he gives to the stimulation.

The human infant, from birth, is responsive to a wide range of external stimulation. He possesses almost all the sensory systems he will have as an adult, and every sense he does possess functions, at least to some extent. In this respect he differs from the young of other mammals, such as the rodents and carnivores, which with few exceptions are functionally blind and deaf at birth. As a consequence, the human infant, from the beginning, lives in a broader environment.

We now ask, to what stimuli arising from social objects is the human infant responsive? Certainly the visual stimuli presented by people, that is, the sight of social objects, evoke responses in him almost from the day of birth. He not only sees them, but, as he grows older, he actively looks at them and subjects them to considerable visual exploration (Wolff, 1963). He smiles and vocalizes and, on occasion, also cries at their appearance. As his motor skills mature, he first reaches out, then grasps, and finally holds on to people. Somewhat later, he crawls and creeps to them on visual cues (e.g., Bayley, 1933; Cattell, 1940; Griffiths, 1954). During the first month, he also attends to the voices of social objects (Bayley, 1933), quiets at the sound, and then may smile and vocalize (Griffiths, 1954; Wolff, 1963). But he is 4 months of age before he can turn his head in the direction of a voice (Cattell, 1940). Furthermore, he appears sensitive to the tone of the voice and, by 8 months of age, to what the voice says.

The human infant is also responsive to the tactile and kinesthetic stimulation provided by social objects. During the first month of life, he quiets when picked up (e.g., Bayley, 1933) and smiles if his hands are rhythmically moved (Wolff, 1963). Much more of a definitive nature cannot be said; his responses to tactile and kinesthetic stimulation from the social object, in the absence of accompanying visual and auditory stimulation, have not yet been systematically studied.

Attractive as the possibility may be to some, there is at present no evidence that the infant responds to olfactory stimuli presented by social objects.

Quite different from the human infant's are the sensitivities and responses of other mammalian infants to stimuli arising from members of their own species. (For a review of the sensory and motor development of many young mammals, see Cruikshank, 1954.) For example, 8 minutes after birth, the newborn kitten, on its own, makes contact with its mother's body. It cannot be sensitive to the visual stimuli presented by the mother

because its eyes do not open until the seventh day. No, it is sensitive to the thermal and auditory stimuli she presents (Tilney and Casamajor, 1924); it is these stimuli that give direction to its head movements. Prominent, too, in the newborn kitten's environment, are its littermates. They also offer thermal and tactile stimuli to which the kitten responds, for kittens, like rodent and dog pups, pile up on each other in the mother's absence, become quiet and sleep. (Bolles and Woods, 1964; Rheingold, 1963; Scott and Marston, 1950). During the first 2 weeks of life, the rodent and carnivore infants' chief social responses are effecting and maintaining contact with mother and littermates. In the third week, tactile and thermal stimuli are no longer dominant; now the kitten and the pup respond to visual, auditory, and olfactory stimuli emanating from social objects. Especially the sight of others stimulates approach and play behavior.

The rhesus infant, however, contrasts with the human, on the one hand, and with the rodent and carnivore infants, on the other. He sees and hears,[1] but his primary responses to social stimuli—aside from nursing, which characterizes all mammalian infants and is not separately discussed—are grasping and clinging (Harlow, 1960), responses that secure thermal, tactile, and kinesthetic stimulation.

In contrast to the human infant, the early responsiveness of other mammals, for example, the rodent, carnivore, and subhuman primate families, appears to depend on different sensitivities—thermal, tactile, and kinesthetic. Associated with these sensitivities are capabilities for locomotion and grasping, which bridge the distance between these infants and others, and effect, instead of visual ties, ties of contact.

The most physically helpless infant, the human, who can neither cling nor locomote, seems, nevertheless, effective in bridging the distance—the distance he cannot travel—between himself and members of *his* group primarily by the use of vision and hearing and by responses such as looking, smiling, and vocalizing, which hold them at his side. Thus, Ainsworth (1964), Rheingold (1961), and Walters and Parke (1965) have pointed to the role of distance receptors in the genesis and maintenance of social responsiveness in the human infant.

The sensitivities and capabilities of still other mammalian infants should at some time be considered. What can we make of the ungulate infant that not only sees *and* locomotes almost from birth, but also uses visual cues to guide his locomotion?

In focusing our attention on the immature mammal's social behavior, we are likely to ignore that very early in life he tends to give the same responses to nonsocial as to social objects. Thus, the human infant looks at a variety of visual arrays and often smiles and vocalizes to them as well (Piaget, 1952; Preyer, 1893; Rheingold, 1961; Salzen, 1963). When a few months older, he reaches out to them, and in another few months crawls to them. Other young mammals, once they have left their mothers, also approach, manipulate, and play with both inanimate and animate objects, (Bolles and Woods, 1964; Harlow, 1962). This observation will be discussed later.

The analysis of the infant's sensitivity to social stimuli has glossed over too lightly the complexity of the social object. Social objects are indeed complex stimulus objects, and often stimulate more than one sense. Their dimensions, nevertheless, are assumed to be specifiable. To discover the effective dimensions, the investigator reduces the complexity of the social object by the experimental manipulation of its structure and behavior. Thus, Rosenblatt and Lehrman (1963), in measuring maternal behavior, used as a standard stimulus for rat mothers any living infant rat 5 to 10

[1]Animals may possess good sensory perception in several modalities but, nevertheless, predominantly use only a few. To possess a sense does not mean that it is characteristically utilized. Thus, the rhesus infant sees but responds to social objects primarily by grasping.

days of age. Replicas and models have also been used; well known are Schneirla and Rosenblatt's (1961) brooder for kittens, Harlow's (1958) terry-cloth cylinder for rhesus infants, and Igel and Calvin's (1960) surrogate mother for dogs. Still farther removed from the real-life social object are the replicas of human faces and parts of faces used to study smiling in human infants (e.g., Ahrens, 1954; Spitz and Wolf, 1946). At an even more abstract level of analysis, Welker (1959), in an attempt to identify the stimuli that facilitate huddling in a litter of pups, measured the effect of contact upon the pup's locomotion under varying room temperatures.

This partial account suggests the diversity of avenues through which the social stimuli of one's own species come to the infant, and the diversity of responses he gives them. It goes without saying that infants of different species differ in their sensory apparatuses, in the state of maturity of each apparatus at birth, and in the rate of development of each subsequent to birth. They differ as well in their capabilities, that is, in the response classes activated by stimulation from social objects. Diverse though their sensory apparatuses and capabilities may be, however, infants of every mammalian species do sense members of their own group—most often, of course, the mother—and do respond to them.

The Infant Initiates Social Behavior

The infant not only responds to social stimuli, he also initiates social contacts. No one will dispute the statement. Yet here, in the absence of evidence from controlled studies, we will often have to rely on everyday and naturalistic observation. Still, observation is clear on this point: The infant is no more passive in his social behavior than he is in other kinds of behavior.

Human infants frequently look at people before they are looked at, smile before they are smiled to, vocalize before they are spoken to, and cry. As a consequence, they attract the attention of individuals and draw them closer. They expose themselves, thus, to social stimulation and, by their own efforts, increase the amount of stimulation in their environments.

What of other mammalian infants? Infant rats on the thirteenth day of life begin to groom each other. A day later, when their eyes start to open, they "play" with each other, "running into one another, jumping, climbing, burrowing, chasing, wrestling" (Bolles and Woods, 1964, p. 433).

Puppy dogs, too, make physical contacts with their mothers and littermates, not waiting to be contacted. In the third week of life, as vision guides their responses, they mouth and bite, first the mouths of littermates, then other parts of their littermates' and the mothers' bodies. In the fourth week, they paw, box, tumble, tussle, and chase each other; in brief, they play. At this age, too, pups go to the mother's head, instead of her belly, whine and cry, raise a paw to her, and lick her face (Rheingold, 1963; Scott and Marston, 1950).

Kittens, too, when 3 weeks of age, leave the home site and approach the female to nurse. They also romp around her, pounce on her, paw her, and toy with her tail. They respond the same way to their littermates. When 4 weeks of age, they initiate almost all the contacts they have with the mother, while she now tries to avoid them (Schneirla, Rosenblatt, and Tobach, 1963).

Rhesus infants, while still very young, approach other infants (Rowell, Hinde, and Spencer-Booth, 1964). Harlow (1962), in reporting his playroom and playpen studies of the infant rhesus, gave details of the infant's initiation of social contacts with other infants. He identified three components: "One of these is a visual-exploration component, in which the animal orients closely to, and peers intently at . . . the other animal. A second is oral exploration, a gentle mouthing response, and the third pattern is that of tactual exploration" (p. 216).

These behaviors were characteristic of surrogate-raised infants and were labeled "presocial." Rough-and-tumble play followed, in which both partners participated in pushing, pulling, mauling, and biting each other. The persistent initiation of contact by rhesus infants—with mothers who reject them—is by now well known (Harlow, Harlow, and Hansen, 1963).

Similarly, infant langur monkeys, observed in the wild, climb on adult females during the first 3 months of life. At 5 months of age, they chase and wrestle with other young. They initiate play with adult females by jumping on them, racing around them, pulling their fur, and pushing up against them; later they initiate playful contact even with adult males (Jay, 1963).

In general, the principle of infant initiation of social behavior is important because it assigns a measure, a rather large measure, of responsibility to the infant for the genesis of his own social behavior. The brevity of treatment accorded this principle here should not be taken as a measure of its importance.

The Infant's Social Behavior Is Modifiable

The third principle states that the infant's social behavior is modifiable, that it is maintained and altered by the responses of social objects to his behavior. The position taken here is that behavior in the immature organism is not fixed but flexible. Nevertheless, I do not wish to set in opposition the processes of maturation and learning; rather, I take the now accepted position that any behavior, no matter how simple or how early its appearance, is already the result of an interaction of genetic material and environmental condition. To claim that the infant's behavior is modifiable, claims nothing about the origin of the behavior, whether innate or learned, for it is always possible to begin the study of learning with any behavior or response the organism already possesses. The purpose here is to examine some social responses of the immature organism that appear to be modifiable by the behavior of social objects in his environment.

The composition of the social group into which the infant is born determines the potential evoking and reinforcing agents of his social behavior and the agents who will provide discriminative stimuli for subsequent social responses. Every member of the group, and seldom is the mother the only member, is potentially a caretaker, if we do not limit the term "caretaker" too narrowly. They are the organisms toward whom he will display social behavior and who will display social behavior toward him; they are the organisms to whose behavior he will respond and the organisms who will respond to his behavior. It is clear, then, that an account of the nature of the infant's social group would have been as appropriate to the discussion of the first two principles as to this principle.

What of the social group into which the human infant most commonly is born in our culture? His is usually a single birth. In this respect, he is different from the rodent and carnivore infant, which is one of many and will have almost constant contact with many littermates. He is also different from the ungulate and primate infants, which early associate with other infants both about the same time. The human infant usually joins a small group composed of mother, father, and perhaps a few older siblings. These few members contrast with the packs and troops that some other mammals form. The primate group, for example, is often composed of several males of varying orders of dominance, several females with young, and many juveniles of all ages. The human infant's, therefore, is a smaller world as far as day-by-day experiences go. Yet, on occasion, his social environment becomes more varied and more extensive; he has relatives of all ages, and babysitters, and, sometimes he is transported to environments rich in both physical and social stimulation.

No recital of how the infant's social behavior is modified can be complete without taking into account the sensitivi-

ties and capabilities of the social objects in the infant's environment, factors raised here for the first time, but important for the whole discussion. Social objects do not respond to all the infant's behavior; presumably some of these lacks can be traced to varying degrees of sensitivity to the infant's behavior. The nature of the response, it is evident, depends upon what the social objects can do, that is, their capabilities. Needless to say, adequacy of care for any specific species is not here at issue; by hypothesis, all the behavior of present species must be equally adaptive. But one may still ask, what is the nature of the response the members of the group give the infant? In passing, I cannot refrain from calling attention to the numerous and ingenious tools and artifacts man has devised to supplement and sometimes supplant the responses he can make to the infant.

We turn now to the major topics of this section: (1) the infant's social behavior is modified by the responses of social objects to his social behavior, and (2) the processes by which modification is effected. It has previously been stated that the infant past the neonatal stage often gives similar responses to both the animate and inanimate objects in his environment. It is now proposed that he learns to discriminate between social objects—that is, members of his own group—and nonsocial objects by the different nature of the responses he receives from both classes.

Let us consider the case for the human infant and use his smiling as an example of responsiveness to social objects. The choice is dictated by the early appearance of smiling and by the attention it has received from developmental psychologists. During the first few weeks of life, the literature reports smiles that are evoked only by stimuli arising from social objects, their voices and their appearances (see Ambrose, 1960; and Gewirtz, 1965, for reviews), and by rhythmic movements of the infant's arms, when these are initiated by a person (Wolff, 1963). There is one exception: Ahrens's (1954) report of an infant smiling at patterns of dots during the second month of life.

I pass over without comment the next few weeks, during which the smile appears more quickly and more frequently, to make a few observations that seem not to have received the attention they deserve. The first is that sometime during the third month, and still more apparent during the fourth month, the smile becomes one component in a chain of responses evoked primarily by visual stimuli. In this chain, the first response is intent regard accompanied by a reduction or even a cessation of physical activity. The next response is facial brightening, and then smiling. The smile is followed by an increase in physical activity. Then, as the infant kicks, waves his arms, or arches his back, he vocalizes (Gesell and Thompson, 1934, p. 261; Washburn, 1929).

This sequence of responses I have labeled "the smiling response." It seems important to make the point, first, because it relates intent visual regard and vocalizing with the smile and, second, because at this period of time the response is given not only to social objects but also to such disparate objects as toys (Piaget, 1952; Rheingold, 1961), the infant's own hand (Piaget, 1952), and a swinging lamp (Preyer, 1893). In *The Origins of Intelligence in Children,* Piaget (1952) reported a number of observations on the development of vision in his son, Laurent. From these observations—and you must remember that smiling was not their focus—I tallied every instance in which Piaget reported a smile *and* the object that evoked it. In eight reports, from 1 month 15 days to 2 months 4 days, the stimulus object was a person. At 2 months 11 days, we find the first reports of smiling to nonsocial objects. On that day, the infant smiled to a handkerchief, a rattle, and other toys, both in motion and motionless. In the next 23 reports of smiles, at ages up to 4 months when the section on vision ended, in only six was the stimulus a social object. In 17 of the 23

smiling episodes in the third and fourth months, the stimulus was a nonsocial object. The smiling response, therefore, cannot be equated with the social response; the nature of the stimulating object must define whether the response is social or nonsocial.

The evidence suggests that, during a stage in the development of the *seeing* human infant, smiles are primarily evoked by visual arrays possessing certain, as yet unspecified, stimulus properties, whether presented by social or nonsocial objects. Schneirla (1959) pointed to low intensity as the effective stimulus property (p. 33), Bowlby (1958), to "certain inherently interesting stimulus patterns" (p. 361), and Salzen (1963), to any contrast or change in brightness. The role of learning in the development of the smiling response at this stage is not yet clear (Gewirtz, 1965). Some of the reinforcing effects of sensory feedback may be unconditioned (Skinner, 1953), although they soon do become conditioned. At any rate, I am less concerned with the origin of the smiling response than with an analysis of the stimulus properties that evoke it.

In the next stage of development, beginning sometime after 4 months of age, the smiling response is evoked more and more often by animate objects, less and less often by inanimate objects; it is evoked by people, seldom by things. These stages, of course, are not precisely fixed in time or mutually exclusive. It must be admitted, further, that in delineating this stage I am predicting what seems reasonable; the studies have not yet been performed.

Two processes can account for the developing discrimination. First, the social object, being animate, possesses, and therefore more regularly presents, the set of effective stimuli. Second, the social object, being animate *and* human, that is, a member of one's own species, is *responsive* to the infant's smiling. The infant's smiling evokes responses from persons much of the time, from things not at all. A smile is often met with a smile, and sometimes also with words and touches. At the least, the human observer will move closer, stay longer, and pay attention. It is upon this characteristic of human interchange that Bowlby (1958) based his statement on the adaptive value of the infant's smile for his own survival.

The development of social behavior in the human infant

Controlled studies have shown that, when these naturally occurring interactions between infant and adult are experimentally programmed, the social responses of infants can in fact be modified by responses from social objects. For example, the number of vocalizations 3-month-old infants give to the sight of a person has been systematically increased (Rheingold, Gewirtz, and Ross, 1959; Weisberg, 1963), as well as the number of smiles in 4-month-old infants (Brackbill, 1958).

These studies suggest that instrumental conditioning may be the process by which the discrimination between people and things is learned, that is, the events contingent upon the infant's response increased the subsequent occurrence of the response. While in general I believe the evidence supports this conclusion, other mechanisms may also be operating. As long as infants are fed and made warm and dry by human hands, we cannot rule out the possibility that social objects are discriminated on the basis of secondary reward value (Keller and Schoenfeld, 1950). Recently, Sears (1963) wrote, "One apparent result of this mutually satisfying relationship is the creation of secondary rewards or reinforcers for both members of the pair. That is, the mother's talking, patting, smiling, her gestures of affection or concern, are constantly being presented to the baby in context with primary reinforcing stimulations such as those involved in eating, fondling, and caressing" (p. 30). Multicausality is not rare in behavior theory, and important responses may well be overdetermined.

One final word on the discrimination between people and things: Exploratory behavior has been defined (Berlyne, 1960, p. 78) as a response that increases

the organism's exposure to his environment. Social behavior, specifically the smiling response, increases the infant's exposure to the sight and sound of persons because of their response to it. The smiling response, like exploratory behavior, maximizes the inflow of stimulation and, thus, of information from the object in question. Although it is possible to simplify too much, still, some more powerful and general principles of behavior may result from categorizing at least some classes of social behavior as exploratory. Exploratory behavior could describe the larger class; social behavior, the class in which the object is not a thing but another living organism.

In the next stage of the smiling response—and here, as elsewhere, the stages are characterized by extensive temporal overlapping—the infant discriminates between familiar and strange social objects. As early as the third month, an infant may sober upon the appearance of a strange person (Gesell and Thompson, 1934). In speaking of this discrimination, I do not refer solely to distress responses. Observation and experimental evidence do not consistently support the conclusion that infants at a certain age are afraid of strangers. First, in my experience, distress responses are not typical of the majority of infants; they occur in some infants for short periods of time, and only a few infants for longer periods of time. In our laboratory, 9-month-old infants smile easily to the entire staff. In spite of the amount of attention paid the phenomenon, we still do not have, even at this late date, normative data on a representative sample of infants. Second, as for evidence: Morgan (1965) found that when the stranger did not touch the infant but smiled, talked, and moved his head as if playing peekaboo, infants 4 to 12 months of age tended to react positively. Gewirtz (1965), measuring the occurrence and frequency of smiles to a relatively strange person presenting an expressionless face, found no abrupt decline in a large sample of children from 1 to 18 months of age; those living in environments in which they had considerable contact with a smaller number of adults, a condition often thought to be correlated with fear of strangers, declined the least.

The distress response aside, it seems likely that most infants give the smiling response to strange persons more slowly and less fully than to familiar ones. We expect the response to be sensitive to such variables as the familiarity of the surrounding environment, the distance from the mother, the brusqueness of the stranger's approach, and the intrusiveness of his behavior. In most instances, whatever the complex set of stimuli that constitutes strangeness may be, its effect wears off fairly quickly. It is interesting to note, in passing, that we tend to call the stimulus "novel" when it evokes approach behavior and "strange" when it evokes withdrawal and distress behavior.

A preference for the familiar—often overlooked these days in our concern with the control exerted over behavior by the novel—is under certain, as yet unknown, conditions characteristic of all animals of all ages; it is a component of the pattern of behavior known as "wildness." In part, the preference for the familiar can be labeled "perceptual learning," previous exposure being required for the discrimination (Kimble, 1961); in part, it would appear to be a matter of the known reinforcers being more reinforcing.

In the next developmental stage, the infant discriminates between one familiar person and another. His social responses —here, specifically, the smiling response —may occur more quickly and more frequently and in greater intensity to persons other than the mother, to perhaps the father or a sibling, as Ainsworth (1964) noted. The same observation was made by Schaffer and Emerson (1964) in recording the infant's response to the departure of known persons. The very constancy of the mother's presence, the fact that her flow of stimuli is often not contingent upon acts of the infant, as well as the aversive nature of some of the necessary caretaking activities, may operate against maximum social interchange. In

contrast, the responses of fathers and siblings are intermittent, are more often—we can surmise—contingent on the infant's behavior, and are more often playful, that is, offering stimulation for its own sake, characteristics that should make for more powerful reinforcement. The appearance of these other persons, then, would possess discriminative stimuli for future reinforcement; they provide cues for the occurrence of interesting stimulation.

The development of the smiling response has been presented in detail as an example of the principle that the infant's social behavior is modified by the responses of people to *his* social behavior. What of the modification of other classes of social behavior in other mammals?

For the infant mammal, too, it is obvious that its behavior toward members of its group must be modified by the responses the social objects give in turn. After the period of close physical attachment to the mother in the rodent, carnivore, and primate young, the infant approaches and contacts both animate and inanimate objects in its environment (Bolles and Woods, 1964; Harlow, 1962; Rheingold, 1963). In time, his responses to them became differentiated, as do his responses to littermates, juveniles, and adults. The infant mammal, too, like the human infant, discriminates early between strange and familiar organisms, and then between different familiar organisms.

The social behavior of animal infants has also been modified in laboratory studies. Rhesus infants raised on surrogate mothers do not develop normal social behavior (Harlow, 1963); rhesus infants raised in bare cages cling to each other (Harlow, 1963); kittens raised on brooder mothers are inept in making contact with their own mothers (Schneirla *et al.*, 1963). Deprivation of normal experiences appears then to markedly affect the development of social behavior in infants.

Suggestive also are the results of some studies of the social responsiveness of dog to man. Puppies ran more often and faster to a passive human being than to one who patted and made a fuss over them. This behavior was modified by deprivation of social contact and, further, occurred in animals reared in isolation which therefore had no history of receiving food at the hands of people. A passive person thus appears to be a primary reinforcer of social approach behavior in the puppy (Bacon and Stanley, 1963; Stanley, 1965; Stanley and Elliot, 1962; Stanley, Morris and Trattner, 1965).

In the analysis of this principle, no reference has been made to some concepts that occur from time to time in treatments of early social behavior; I refer to such concepts as social bond, social attachment, and critical periods. These are higher-order concepts which go beyond this elementary presentation. Omitted also, but only because of time and space exigencies, is a consideration of sex differences in early social behavior.

The Infant Modifies the Behavior of Others

The fourth principle states that the infant, by his appearance and behavior, modifies the behavior of other social objects. He not only evokes responses from them but maintains and shapes their responses by reinforcing some and not others. From our individual experiences, we know how effective he can be! He is so effective because he is relatively helpless yet active and because he is so attractive to his beholders. The amount of attention and the number of responses directed to the infant are enormous—out of all proportion to his age, size, and accomplishments. Under ordinary circumstances, in any human group containing an infant, the attention directed toward him is usually considerable. Although I have no data to cite for the human group, the facts in primate groups have been well documented (e.g., DeVore, 1963; Jay, 1963; Rowell *et al.*, 1964). For the langur monkey, Jay (1963) has reported, "From birth the newborn is a focal point of interest for all adult and subadult females in the troop. Females gather around the mother as soon as they notice the

newborn. . . . A group of from four to ten females quickly surrounds and grooms the mother. . . . Each time she sits, three or four females crowd in front of her to touch, smell, and lick the newborn. . . . An infant may be held by as many as eight or ten females and carried as far as 75 feet from its mother in the first two days of life" (pp. 288–289). Similarly, for the baboon, DeVore (1963) wrote:

> The birth of a new infant absorbs the attention of the entire troop. From the moment the birth is discovered, the mother is continuously surrounded by the other baboons, who walk beside her and sit as close as possible when she rests. . . . After a week or 10 days, older juveniles and females who sit beside the mother and groom her quietly for several minutes may be allowed to reach over and touch the infant lightly. Young juveniles and older infants sit near the mother and watch her newborn intently, but are seldom able to approach the mother because of the older troop members around her. . . . Older juvenile or subadult females appear to be most highly motivated toward the newborn infant, and the moment a mother sits one or more of these females is likely to stop whatever she is doing and join the mother. . . . Juvenile and young adult males express only perfunctory interest in the infant, but older males in the central hierarchy frequently come and touch the infant (pp. 313–314).

Appearance aside, the helplessness of most mammalian infants, of course, demands caretaking responses. The nature and frequency of caretaking have been documented for many mammals (e.g., Rheingold, 1963), including the human infant (e.g., Rheingold, 1960). Rosenblatt and Lehrman (1963) have shown that the maintenance of maternal responses, although partly dependent on the mother's physiological condition, is also partly dependent on stimulation by the young. And Harlow *et al.* (1963) have shown how some rhesus infants, by their repeated efforts to attach themselves to rejecting rhesus mothers, eventually made the mothers passably accepting of them. The infant also evokes nurturant behavior in others than the mother. Noirot (1964) has shown how maternal or caretaking behavior was increased in both male and female mice by brief contact with an infant mouse. The above passages from Jay and DeVore make the same points.

Further, the infant's positive social responses evoke responsiveness in kind from others in his environment. The human infant's smiles, for example, are met by smiles; his vocalizations, by vocalizations; his playful overtures, by play. Here, too, may be mentioned the distress cries of the infants; surely they modify the behavior of others. Generally, they exert a powerful effect upon the members of almost all mammalian groups. So aversive, especially to humans, is the crying of the infant that there is almost no effort we will not expend, no device we will not employ, to change a crying baby into a smiling one—or just a quiet one.

Although the mechanisms have not yet been specified, there seem to be strong reinforcing effects in caring for the needs of the helpless and dependent. Caretakers appear to find satisfying the operations of feeding, bathing, and putting the infant to sleep. We have long paid attention to how the infant's behavior is modified by the behavior of his caretakers; only now are we beginning to ponder on how the infant's behavior may modify the behavior of his caretakers.

Conclusion

The four principles, in summary, provide a framework for classifying and organizing knowledge of the development of social behavior in the human and other mammalian infants. They may also provide the distance required to gain a fresh perspective on the development of social behavior. They bypass controversies, especially the troublesome one of innate versus learned behavior. They are not, of course, explanatory principles, but they do leave the door open for an analysis of the processes by which behavior is modified. The four principles, furthermore, do not represent four stages in development; rather, they exist together and are inti-

mately related. Within each principle, however, there are stages of development, here only hinted at. Finally, they take cognizance of species-characteristic behavior in their dependence upon the sensitivities, capabilities, and social organization of each animal.

The principles, in addition, may serve to correct for premature and incautious generalizations from one species to another. More and more rarely now do we make the error of construing the behavior of animals in human terms; we must guard as carefully, in the absence of supporting evidence, against the error of construing the behavior of humans in animal terms.

In this presentation, it has been assumed that no extra theories, laws, or constructs are necessary to account for the behavior of the infant as distinct from the behavior of older organisms, to account for social behavior as distinct from other classes of behavior, or to account for the behavior of one species as distinct from the behavior of other species. Much can be gained, I believe, by an integration of all mammalian behavior into a science of behavior.

We find ourselves, then, in a dilemma. On the one hand, we find attractive the idea that if stimuli, responses, and reinforcers are selected to be appropriate for the species under investigation, the laws of learning may be similar (Skinner, 1957). We find congenial too, Hull's (1945) assumption that "all behavior of the individuals of a given species and that of all species of mammals, including man, occurs according to the same set of primary laws" (p. 56). On the other hand, we are always conscious, and must always be, of the differences. Hull proposed that the forms of the equations representing the behavioral laws of both individuals and species are identical, and that the differences between individuals and species will be found in the empirical constants of the equations. The behavioral scientist has faith in the set of primary laws; his task is to find both them and the constants. Perhaps the dilemma will be resolved when we restrict the objectives of the science of behavior and seek not to explain *behavior* but to explain only the *regularities* in behavior.

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10

THE CHILD AT SCHOOL

The school's role in the life of the child inevitably involves the question: What are schools for? Since time immemorial the school's chief concern has been with the child's cognitive development—that is, with knowledge, problem solving, and higher mental processes. In the days of our forefathers, schoolmarms and schoolmasters drilled children in the three R's. Then came Dewey and the progressives, urging education of the whole child. Still later came Sputnik, and with it a return to the basics of education—with a difference. Increasingly, educators were concerned that children be able to solve problems and to deal with an uncertain world where truth had lost its static quality and concepts of relativism and probability had gained precedence. There was also a growing concern that children not merely know, but know ways of knowing. Since knowledge soon becomes outdated, each child must acquire the appetite and skills for a lifetime of learning.

Despite the current stress on cognitive development, attention is also being paid the child's emotional and social adjustment—and teachers are more sophisticated in this regard than formerly. They are showing increasing concern for group dynamics, or the interaction of children in the classroom setting. In the first article of this section. Jules Henry suggests that children react to all sorts of subtle shadings in the teaching process. Dr. Henry, who is Professor of Psychology at Washington University in St. Louis, indicates that familiar classroom behaviors, ordinarily taken for granted, may be extremely significant. He uses anecdotal evidence to show how apparently innocuous classroom experiences produce attitudes of hostility and docility.

Some voices are being raised in behalf of still broader educational goals—for example, the teaching of societal norms (Dreeben, 1967). With this aim in mind, Dreeben analyzes the social structure of the school, especially in contrast to the family, and considers how that structure relates to the acquisition of norms integral to public and occupational life in industrial societies. Concern for the child's physical and social environment in the school is nothing new; however, there has been little systematic study of how the school's behavioral settings and personnel influence the child's relationship to himself, his peers, and society (Clausen & Williams, 1963).

Another recent concern of the schools has been with the culturally deprived, whose membership in secondary cultures somehow prevents full and satisfying participation in the major culture. For perhaps one child in five, current schools offer little but frustration and failure—a situation all too common in certain socioeconomic and racial groups. And statistics suggest that the problem is growing worse. The birth rate of the lower social classes is increasing—and in-

telligence correlates negatively (about −.30) with family size (Jensen, 1968). However, many educators believe this statistic could be changed if children of the disadvantaged were provided appropriate education, especially in early years. The barrage of writing on this subject—much of it emotionalized—all but obscures the voices of a few who doubt whether the school can make it possible for children of the culturally disadvantaged to compete on equal terms. Note, in particular, Coleman's (1966) finding that discrepancies in the educational achievement of different social and racial groups correlate only slightly with factors over which the school has control.

However, granted that special education for the disadvantaged may prove successful, many questions remain to be answered. For example, is desegregation necessary? Exactly what should be the content of education for disadvantaged children? Are particular strengths of the secondary cultures themselves overlooked? The article by J. W. Getzels, Professor of Education and Psychology at the University of Chicago, concerns early childhood education, especially for the disadvantaged. Most importantly, Dr. Getzels raises questions about how deprived children are to be transformed into effective members of society. He first considers the now commonly held belief that young children require an environment consciously planned for its potential relevance to the child's learning. In language and values, especially, the middle-class child's background is continuous with his school experience, the lower-class child's discontinuous. Getzels examines current preschool programs and advises that they be analyzed and compared. He questions whether such programs offer what the child needs and recommends a transformation of the school itself. In general, he helps pinpoint the issues, but leaves to others the task of supplying the answers.

Meantime, for children of every age and social level, the search continues for effective ways to induce learning. In this regard, perhaps too much emphasis has been placed on the manipulation of school tasks to fit a single variable—for example, IQ, or sex, or age. Actually, the nature of the learning process makes it essential to determine both ways in which individual children learn—that is, their learning styles—and unique patterns of abilities. There is some evidence that such styles and patterns can be identified in the learning laboratory (Jensen, 1966).

Naturally, provision for individual learning styles would require organizing learning experiences as flexibly as possible. It would also involve a concern for the way individual teachers relate to particular children, a topic discussed in the article by Miriam Goldberg, Professor of Psychology and Education at Teachers College, Columbia University. Dr. Goldberg reviews relevant research and concludes that most teachers' effectiveness depends on the characteristics of the children and on the school's adaptation of the teaching situation to their special needs. Her emphasis on teacher-child interaction is another example of the concern for interpersonal interaction manifested in all areas of the behavioral sciences nowadays. The part of Dr. Goldberg's article applying specifically to disadvantaged pupils discards the notion that there is "a way" to teach such children.

The last article, by Dr. Paul Torrance of the University of Minnesota, concerns creativity, a topic on which educators are focusing great interest today. Dr. Torrance, who is one of the outstanding writers on this subject, argues that the average teacher's concept of the ideal pupil imposes serious restraints on the development of children's creative abilities. He describes the sort of characteristics commonly possessed by creative children and indicates that the nature of these traits requires certain modifications in current educational practices.

ATTITUDE ORGANIZATION IN ELEMENTARY SCHOOL CLASSROOMS

JULES HENRY

The Witch-Hunt Syndrome

One of the most striking characteristics of American culture since the settlement has been the phenomenon of intragroup aggression, which finds its pathological purity of expression in witch hunts.[1] It comes as a frightening surprise to democratic people to find themselves suddenly in terror of their neighbors; to discover that they are surrounded by persons who carry tales about others while confessing evil of themselves; to perceive a sheeplike docility settling over those whom they considered strong and autonomous. The *witch-hunt syndrome* therefore, as constituting one of the key tragedies of democracy, is selected for the elucidation of the organization of attitudes in our culture. In this witch's brew *destructive criticism* of others is the toad's horns, *docility* the body of the worm; *feelings of vulnerability* the chicken heart; *fear of internal (intragroup) hostility* the snake's fang; *confession of evil deeds* the locust's leg; and *boredom and emptiness* the dead man's eye. The witch-hunt syndrome is thus stated to be a dynamically interrelated system of feelings and actions made up of destructive criticism of others, docility, feelings of vulnerability, fear of internal aggression, confession of evil deeds, and boredom.

The witch-hunt syndrome in full panoply was observed in but one of the dozen classrooms in four schools studied in the research which I discuss here. Thus it seems a relatively rare phenomenon. But the question I set myself to answer is, How could it occur at all? What are the attitudes, present in the children, that were organized by this teacher into the syndrome? How could she do it? With what materials did she work? She did not create out of nothing the attitudes she manipulated in her "Vigilance Club" in this fourth-grade classroom in a middle-class American community. She had to have something to start with. The argument of this paper will be that the feelings and tendencies to action which this teacher organized into the witch-hunt syndrome in her class are present in an *un*-organized state in other classrooms. Given a certain type of teacher, he or she will be able to develop into a highly specialized, tightly integrated system in his classroom those attitudes which are present in differently organized state in the children in all classrooms. Let us now look at a meeting of the Vigilance Club.[2]

> 1. In the extreme back of the room is a desk called the "isolation ward." A child has been placed there for disciplinary reasons. The Vigilance Club of the class is holding a meeting. . . . Officers are elected by the group. The purpose of the club is to teach children to be better citizens. The order of procedure is as follows: the president . . . bangs her gavel on the desk and . . . says, "The meeting of the Vigilance Club will come to order." Each child then takes from his or her desk a booklet whose title is *All About Me* . . . and places it on top of his desk. The vice-president calls the name of a child, gets the child's booklet, and places it on the teacher's desk. The president then calls on the child and asks, "———, have you been a good citizen this week?" The president says, "Name some of the good things you have done," and the child tries to recall some, like opening doors for people, running errands, etc. Next the president asks the class if it remembers any good things the child has done. Each point is written in the child's booklet by the teacher. The president then . . . says to the child, "Name the bad things you have done.

Abridged from "Attitude Organization in Elementary School Classrooms," *American Journal of Orthopsychiatry,* Vol. 27 (1957), pp. 117–133. Copyright, the American Orthopsychiatric Association, Inc. Reproduced by permission.

[1]M. L. Starkey, *The Devil in Massachusetts* (New York: Alfred A. Knopf, Inc., 1949).

[2]In order to prevent identification of teachers and children, the names of my student observers are not used.

. . ." The child reports the wrongs he has committed during the week, and the class is asked to contribute information about his behavior. This too is written in the booklet by the teacher, who also reprimands the student, registers horror, scolds, etc. . . . When one child reports a misdemeanor of another the teacher asks for witnesses, and numerous children sometimes volunteer. . . . The child in the "isolation ward" reported some good deeds he had done; the children reported some more, and the isolated child was told he would soon be released. . . . [During this meeting some children showed obvious pleasure in confessing undesirable behavior. One child, by volunteering only good things of the students, seemed to be using the situation to overcome what seemed to the observer to be her unpopularity with the class.]

Before analyzing this protocol for the attitudes present in it, it will be well to look at some events that occurred in this classroom on another day.

2. During the game of "spelling baseball" a child raised her hand and reported that Alice and John had been talking to each other. This occurred when neither child was "at bat." The teacher asked Alice if this was so, and she replied that it was, but John denied having spoken to Alice. The teacher said that John must have listened to Alice, but he denied this too. Then the teacher asked whether there had been any witnesses, and many hands were raised. Some witnesses were seated on the far side of the room, and hence could not have seen Alice and John from their location in the room. All those testifying had "seen" Alice talking, but denied John's guilt. Alice was sent to the "bull pen," which meant that she had to sit on the floor behind the teacher's desk, and could no longer participate in the game. . . .

3. Mary raised her hand and said, "It hurts me to say this. I really wish I didn't have to do it, but I saw Linda talking." Linda was Mary's own teammate, had just spelled a word correctly, and had gone to first base. The teacher asked Linda if she had talked, and Linda said, "No, I just drew something in the air with my finger. . . ." She was sent to the "bull pen."

In these examples we see intragroup aggression; docility of the children in conforming, with no murmur of protest, to the teacher's wishes; and confession of "evil." In such a situation children develop feelings of vulnerability and fear of detection. Let us now look for these phenomena in classrooms presided over by teachers who seem to represent the more normal American type, in comfortable, middle-class, white communities: teachers who are conscientious and reasonably gentle, but creatures of their culture, and humanly weak. We begin not with internal aggression as expressed in spying and talebearing, but with the milder, though closely related phenomenon of carping, destructive criticism. While this occurs throughout the sample, I give here examples only from a fifth-grade classroom in the same school system.

4. Bill has given a report on tarantulas. As usual the teacher waits for volunteers to comment on the child's report.

Mike: The talk was well illustrated, well prepared. . . .

Bob: Bill had a piece of paper [for his notes], and teacher said he should have them on cards. . . .

Bill says he could not get any cards.

Teacher says that he should tear the paper next time if he has no cards.

Bob: He held the paper behind him. If he had had to look at it, it wouldn't have looked very nice.

5. Betty reports on Theodore Roosevelt.

A child comments that it was very good but she looked at her notes too much.

Teacher remarks that Betty had so *much* information.

Bob: She said "calvary" [instead of "cavalry"]. . . .

7. Joan reads us a poem she has written about Helen Keller . . . which concludes with the couplet:

"Helen Keller as a woman was very great;
She is really a credit to the United States."

Teacher (amusedly): Is "states" supposed to rhyme with "great"?

When Joan murmurs that it is, the teacher says, "We'll call it poetic license." . . .

Competition

Competition is an important element in the witch-hunt syndrome. Since witch hunts involve so often obtaining the attention and approval of some powerful central figure, the examples of competitiveness that I shall cite illustrate how approval and attention seeking occur as the child attempts to beat out his peers for the nod of the teacher. It would be easy to cite examples from the protocols of the merciless laughter of children at the failures or gaucheries of their classmates. I am interested, however, more in showing the all-pervading character of the phenomenon of competition, *even in its mildest forms*. The first example is from a fourth-grade music lesson:

> 11. The children are singing songs of Ireland and her neighbors from the book *Songs of Many Lands*. . . . Teacher plays on piano while children sing. . . . While children are singing some of them hunt in the index, find a song belonging to one of the four countries, and raise their hands before the previous song is finished in order that they may be called on to name the next song. . . .

Here singing is subordinated, in the child, to the competitive wish to have the song he has hunted up in the index chosen by the teacher. It is merely a question of who gets to the next song in the index first, gets his hand up fast, and is called on by the teacher.

The following examples also illustrate the fact that almost any situation set by the teacher can be the occasion for release of competitive impulses:

> 12. The observer enters the fifth-grade classroom.
>
> Teacher: Which one of you nice polite boys would like to take [observer's] coat and hang it up? (Observer notes: From the waving hands it would seem that all would like to claim the title.)
>
> Teacher chooses one child . . . who takes observer's coat. . . .
>
> Teacher: Now children, who will tell [observer] what we have been doing?
>
> Usual forest of hands . . . and a girl is chosen to tell. . . .
>
> Teacher conducted the arithmetic lesson mostly by asking, "Who would like to tell . . . the answer to the next problem?"
>
> This question was usually followed by the appearance of a large and *agitated* forest of hands; apparently *much competition to answer*.

Thus the teacher is a powerful agent in reinforcing competition.

It has already been pointed out that carping criticism helps to settle in the child a feeling of vulnerability and threat. In this connection it is significant that *the failure of one child is repeatedly the occasion for the success of another*. I give one illustration below from the same class as the one from which I have taken Example 12.

> 13. Boris had trouble reducing 12/16 to lowest terms, and could get only as far as 6/8. Much excitement. Teacher asked him quietly [note how basically decent this teacher is] if that was as far as he could reduce it. She suggested he "think." Much heaving up and down from the other children, all frantic to correct him. Boris pretty unhappy. Teacher, patient, quiet, ignoring others, and concentrating with look and voice on Boris. She says, "Is there a bigger number than 2 you can divide into the two parts of the fraction?" After a minute or two she becomes more urgent. No response from Boris. She then turns to the class and says, "Well, who can tell Boris what the number is?" Forest of hands. Teacher calls Peggy. Peggy gives 4 to be divided into 12/16, numerator and denominator.

Where Boris has failed Peggy has been triumphant; *Boris's failure has made it possible for Peggy to succeed.*

This example . . . [is one] in which the discomfort of the child was *visible*, and . . . [illustrates] how vulnerable the children feel in the presence of the attacks of the peer group in the classroom. But since these are children who face the world with serious anxiety to begin with, the classroom situation sustains it. Let us look at some stories created by these very

children, and read by them to their classmates. . . . Here are *all* the stories read to their classmates by these children during an observation period.

> 14. (a) Charlotte's story: "Mistaken Identity." One day last year my family and I went to the hospital to visit somebody. When we were coming out and were walking along my father hit me. I came up behind him to hit him back, but just as I was about to do it I looked back and he was behind me! I was going to hit the wrong person!
>
> (b) Tommy's story: "The Day Our House Was Robbed." [Observer has recorded this in the third person.] He was coming home from school one afternoon. He knew his Mom was away that afternoon. He started to go in the side door, but decided, he doesn't know why, to go round the back. He found the door open, went into the kitchen, looked into the front room where he saw a thief. Tommy "froze stiff" (chuckle of appreciation from the class), ran out, shouted "Stop thief" as the man ran out after him. He went to a neighbor, rang the bell, called his mother at the store. The cops came, asked questions, but the man had gotten away with $99 and his mother's watch. If he had gone in the side door he would not have had a chance to see the man. Changing to the back door "may have saved my life." [Teacher's only remarks about this story were: 1) instead of having said "froze stiff," Tommy should have said "froze stiff as something"; 2) he should have left out the word "then" in one place; 3) he could have made the story clearer; 4) he changed from the past to the present tense.]
>
> (c) Polly's story: "Custard the Lion." Custard the Lion was the most timid animal in Animal Town. The doctors couldn't cure him. Then they found a new medicine. It had strange effects, but Custard wanted to try it. When he did he felt very queer. (Child gives details of queer feeling.) But he soon realized he wasn't afraid of anything. [Teacher's first remark: "You didn't let us hear the last sentence."]

These stories contain elements of anxiety and even of terror. As each child finishes, the carping criticism of students and teacher then reminds him of his vulnerability. As the child sends out his cloud of fear, it returns with the leaden rain of hostility.

Docility

It comes as a somewhat shocking surprise, perhaps, to middle-class parents, to find their children described as "docile." Yet we have already seen the perfection of docility in the Vigilance Club, and we shall presently see its manifold forms in more normal classrooms.

> 15. First grade. The children are to act out a story called "Pig Brother," which is about an untidy boy. The teacher is telling the story. One boy said he did not like the story, so the teacher said he could leave if he did not wish to hear it again, but the boy did not leave.
>
> 13. In gym the children began to tumble, but there was much restless activity in the lines, so the teacher had all the children run around the room until they were somewhat exhausted before she continued the tumbling.
>
> 14. Second grade. The children have been shown movies of birds. The first film ended with a picture of a baby bluebird.
>
> Teacher: Did the last bird ever look as if he would be blue?
>
> The children did not seem to understand the "slant" of the question, and answered somewhat hesitantly, yes.
>
> Teacher: I think he looked more like a robin, didn't he?
>
> Children, in chorus: Yes.

Item 17 is one of a large number of instances, distributed throughout all grades, in which the children exhibit their docility largely through giving the teacher what he wants. Thus in the elementary schools of the middle class the children get an intensive eight-year-long training in hunting for the right signals and giving the teacher the response wanted. The rest of the examples of docility document this assertion.

> 18. Fourth grade. (a) An art lesson.
>
> Teacher holds up a picture.
>
> Teacher: Isn't Bob getting a nice effect of moss and trees?
>
> Ecstatic Ohs and Ahs from the children. . . .
>
> The art lesson is over.

Teacher: How many enjoyed this?

Many hands go up.

Teacher: How many learned something?

Quite a number of hands come down.

Teacher: How many will do better next time?

Many hands go up.

(b) Children have just finished reading the story "The Sun Moon and Stars Clock."

Teacher: What was the highest point of interest—the climax?

The children tell what they think it is. Teacher is aiming to get from them what *she* considers the point of climax, but the children seem to give everything else but.

Bobby: When they capture the thieves.

Teacher: How many agree with Bobby?

Hands, hands.

19. Fifth grade. This is a lesson on "healthy thoughts," for which the children have a special book depicting, with appropriate illustrations, specific conflictual incidents among children. The teacher is supposed to discuss each incident with the children in order to help them understand how to handle their emotions.

One of the pictures is as follows: A sibling *pair* is illustrated by *three* boys: 1) One has received a ball. 2) One is imagined to react with displeasure. 3) One is imagined to react benignly and philosophically, saying, "My brother couldn't help being given the football; we'll use it together."

Teacher: Do you believe it's easier to deal with your thoughts if you own up to them, Betty?

Betty: Yes it is, if you're not cross and angry.

Teacher: Have you any experience like this in the book, Alice?

Alice tells how her brother was given a watch and she envied him and wanted one too; but her mother said she wasn't to have one until she was fifteen, but now she has one anyway.

Teacher: How could you have helped—could you have changed your thinking? How could you have handled it? What could you do with mean feelings?

Alice seems stymied. Hems and haws.

Teacher: What did Susie (a character in the book) do?

Alice: She talked to her mother.

Teacher: If you talk to someone you often then feel that "it was foolish of me to feel that way. . . ."

Tommy: He had an experience like that, he says. His cousin was given a bike and he envied it. But he wasn't "ugly" about it. He asked if he might ride it, and his cousin let him, and then, "I got one myself; and I wasn't mean, or ugly or jealous."

Before continuing it will be well to note that since the teacher does not say Alice was wrong the children assume she was right and so copy her answer.

As we go on with this lesson, we shall continue to see how the children's need for substitute gratification and their inability to accept frustration are the real issues, which even prevent them from getting the teacher's point. We shall see how, in spite of the teacher's driving insistence on her point, the children continue to inject their conflicts into the lesson, while at the same time they gropingly try to find a way to gratify the teacher. *They* cannot give the "right" answers because of their conflicts; teacher cannot handle their conflicts, even perceive them, because *her* underlying need is to be gratified by the children. The lesson goes on:

Teacher: I notice that some of you are only happy when you get your own way. You're not thinking this through, and I want you to. Think of an experience when you didn't get what you want. Think it through.

Charlie: His ma was going to the movies and he wanted to go with her, and she wouldn't let him; and she went off to the movies, and he was mad; but then he went outside and there were some kids playing baseball, so he played baseball.

Teacher: But suppose you hadn't gotten to play baseball? You would have felt hurt, because you didn't get what you wanted. We can't help feeling hurt when we are disappointed. What could you have done; how could you have handled it?

Charlie: So I can't go to the movies, so I can't play baseball, so I'll do something around the house.

Teacher: Now you're beginning to think! It takes courage to take disappointments. (Turning to the class) What did we learn? The helpful way . . .

Class: is the healthy way!

Before entering the final section of this paper, we need to ask: Why are these children, whose fantasies contain so many hostile elements, so docile in the classroom; and why do they struggle so hard to gratify the teacher and try in so many ways to bring themselves to her attention (the "forest of hands")? We might, of course, start with the idea of the teacher as a parent figure, and the children as siblings competing for the teacher's favor. We could refer to the unresolved dependency needs of children of this age, which make them seek support in the teacher, who manipulates this seeking and their sibling rivalry to pit the children against each other. Other important factors, however, that are inherent in the classroom situation itself, and particularly in middle-class classrooms, ought to be taken into consideration. We have observed the children's tendency to destructively criticize each other, and the teachers' often unwitting repeated reinforcement of this tendency. We have taken note of the anxiety in the children as illustrated by the stories they tell, and observed that these very stories are subjected to a carping criticism, whose ultimate consequence would be anything but alleviation of that anxiety. Hence the classroom is a place in which the child's underlying anxiety may be heightened. In an effort to alleviate this he seeks the approval of the teacher, by giving right answers and by doing what teacher wants him to do under most circumstances. Finally, we cannot omit the teacher's need to be gratified by the attention-hungry behavior of the children.

A word is necessary about these classrooms as middle class. The novel *The Blackboard Jungle*[3] describes schoolroom behavior of lower-class children. There we see the children *against the teacher,* as representative of the middle class. But in the classes I have described we see the *children against each other,* with the teacher abetting the process. Thus, as the teacher in the middle-class schools directs the hostility of the children toward one another and away from himself, he reinforces the competitive dynamics within the middle class itself. The teacher in lower-class schools, on the other hand, appears to become the organizing stimulus for behavior that integrates the lower class, as the children unite in expressing their hostility to the teacher.

[3]E. Hunter, *The Blackboard Jungle* (New York: Simon and Schuster, 1954).

Confession

The Vigilance Club would have been impossible without confession, and the children's pleasure in confession. But, as with the other parts of the syndrome, confessing occurs in other classrooms also; it can be elicited when the proper conditions are present, and the children can be seen to enjoy it—to vie with one another in confessing. Let us follow the lesson on "healthy thoughts" a little further. We will see how confession occurs as the children seek to give teacher *precisely* what she wants.

> 20. Teacher asks if anyone else has had experience like that [of two children who have just recited], where they were mean and angry.
>
> Dick: He has a friend he plays baseball with, and sometimes they fight; but they get together again in a few minutes and apologize.

In this first example we note one of the important aspects of the confession element in the syndrome: the culprit must have given up his evil ways, and now be free of impurities.

> In response to Dick's story, teacher says: You handled it just right. Now let's hear about someone who had a similar experience and didn't handle it just right.
>
> Tom: His little brother asked for the loan of his knife, but it was lost, and he got angry with his little brother for asking. [This knife story follows a sequence of several stories about knives told by other children. The exuberance of knife stories following immediately on the teacher's approval of the first one suggests that some of them are made to order and served up piping hot for teacher's gratification.]
>
> Teacher: Now Tom, could you have worked it out any differently? (Observer notes that Tom seems to enjoy this confession; certainly he is not abashed or ashamed.)

Tom: Later he asked me if he could help me find it. He found it in a wastebasket, and then I let him borrow it.

Harry: Sometimes I get angry when my friends are waiting for me and . . . (observer missed some of this) and my little sister asked if she could borrow my autoracing set, and I hit her once or twice. (Class laughs.)

Here we see another factor so important to the flourishing of the syndrome: the audience gets pleasure through the confessor's telling about deeds the audience wishes to commit: who among Harry's listeners would not like to have hit his sister, or anyone, "once or twice"?

The teacher then goes on: What would you do now—would you hit her?

Harry: Now I'd probably get mad at first, but let her have it later.

Thus Harry has mended his ways—in teacher-directed fantasy at least—and returned to the fold.

So far we have had confession of mean and angry thoughts and violence. We shall now see confession to unacceptable fear. In all cases the teacher says what type of confession she wishes to hear, and what the resolution should be of the unacceptable behavior; and the children vie with one another to tell commensurable tales, as they derive pleasure from the total situation—through approval of the teacher, expression of their own real or fantasied deviations, and the delight of their peers. In these situations the pleasure of the peer group is seen to derive not so much from the "happy ending" the children give their stories but rather from the content of the story itself. It is interesting that no carping criticism appears; rather the entire situation is a jolly one. It seems that within unspoken limits the children permit one another to boast of "evil" behavior because of the deep pleasure obtained from hearing it. Thus impulse expression becomes a device for role maintenance in the classroom.

The lesson proceeds:

Two children enact a little skit in which they have to go to the principal to ask him something. One of them is afraid of the principal, the other is not. The moral is that the principal is the children's friend, and that one should not be shy.

Gertrude: Well, anyway, the principal isn't a lion, he's your friend; he's not going to kill you.

Teacher: That's right, the principal is a friend, he says hello and good morning to you. . . . Have you ever felt shy?

Meriam: The first year I sold Girl Scout cookies I didn't know how to approach people; and the first house I went to I didn't know the lady; and I stuttered and stammered, and didn't sell any cookies. By the second house I had thought it all out before I rang the bell, and I sold two boxes. (Triumphantly.)

Teacher: It helps to have self-confidence.

Ben now tells a story, with a happy ending, of being afraid of a principal. Then Paul tells a story, amid gales of laughter about his being scared on a roller coaster. By this time there is so much excitement among the children that the teacher says: Wait a minute—manners!

John: He was scared to go on the Whip-the-Whirl (scornful laughter from the class); but after he went he liked it so much that he went eight times in a row. (This is well received.)

Many hands go up. Teacher waits....

Michael: He was at Pleasure Park on the ferris wheel (scornful Aw from the class) "and a girl kept rocking it, and I started to get green" (roar of laughter).

Teacher: Now we'll have to stop.

Certain phenomena not emphasized before appear in this section. Confession is used by the authoritative figure, the teacher, to strengthen attachment to significant but potentially terrifying figures like school principals, and to polish up cultural shibboleths like "self-confidence." For the child storytellers confession becomes an opportunity for bathing in the emotional currents of the peer group, as the child stimulates the group's approval through presentation of group standards, and awakens group pleasure as the peer group responds to its own anxiety about weakness, and experiences resolution of

the anxiety through the happy ending. With a perfect instinct for what is right, each child provides catharsis for his peers. By presenting himself as weak, he enables his peers to identify with him; and then, as he overcomes his weakness, he enables his companions, too, to feel strong.

What this lesson on healthy thoughts may have accomplished by way of creating a permanent reservoir of "healthy thoughts" is difficult to say, but that it helped create solidarity among the students, and between them and the teacher is clear from the fact that when she suddenly shifted ground to say, "Do you think you are wide enough awake for a contest in subtraction of fractions?" the children responded with a unanimous roar of "Yes," as if she had asked them whether they were ready for cookies and ice cream! . . .

Boredom

It seems unnecessary to document the fact that children become bored in class, for much of modern thinking and curriculum arrangement is aimed at eliminating it. The shifts at 15-minute intervals from one subject to the next in the elementary school classrooms is one example of this effort. Boredom, which means emotional and intellectual separation from the environment, is an insupportable agony, particularly if the emotional vacuum created by such separation is not filled by gratifying fantasies, or if it is filled by terrifying ones. To fill this vacuum people in our culture will throw themselves into a great variety of even relatively ungratifying activities. Since in this situation, bored children attack almost any novel classroom activity with initial vigor, the witch-hunt syndrome or any modification thereof helps to overcome boredom: better to hunt than be bored. In a full and satisfying life there is no place for witch hunts. The school system that can provide a rich program for children has no need of Vigilance Clubs, nor even of lessons on "healthy thoughts."

Discussion and Conclusions

In this paper I have used suggestions from communications theory in an effort to order the data obtained from direct observation of elementary school classrooms. Information, the central concept of communications theory, refers to measurable differences in states of organization. In human behavior, as seen in the classroom under discussion, we observe *qualitative shifts in state, for different teachers organize the same underlying emotional characteristics of the children to achieve different organizations of the emotions.* One teacher so organizes the children's emotions as to accomplish an intensification of the fear of intragroup aggression, while she turns the children's hostility toward one another. A different teacher may organize the emotions of the children so that a **euphoria** in which students and teacher are bathed in a wave of emotional gratification is achieved. The great skill in being a teacher would seem to be, therefore, a *learned*-capacity to keep shifting states of order intelligently as the work demands. This does not mean the traditional classroom order, where you can hear a pin drop, but rather the kind of order in which the *emotions of the children are caught up and organized toward the achievement of a specific goal.* It is not necessary, perhaps, that even the most prominent emotions of the children, like competitiveness, for example, form part of the organized whole. Yet, on the other hand, it is difficult to see how, in the present state of our culture, competitiveness can be overlooked. It would seem, perhaps, that the important outcome to avoid is that the competitiveness should become destructive of peers, while reinforcing dependence on the teacher.

The phenomenon I have labeled "docility" occurs because of the absolute dependence for survival of the children on the teacher. That is to say success in school depends absolutely on the teacher, and self-respect, as a function of the opinion of others, in the home or among peers, is in part a function of success or failure in school. In these circumstances the child's capacity to respond automatically to the signals he gets from the

teacher is bound to acquire somewhat the appearance of instinctive behavior. Although it occurs at a much higher level of integration than instinct, the child hunts for the proper signals from the teacher, and the child's responses take on instinctual quality. They *must;* otherwise, like the nestling who does not open its mouth when the mother arrives with a worm, he will never eat the ambrosia of teacher's approval, so necessary to his survival. In this situation both children and teacher easily become the instruments of their own unconscious processes, as they, like Joseph and his brethren, fall on each other's necks in a shared ecstasy of exuberant dependence. Teacher and pupil will have gratified each other, but it remains an open question whether the children will have learned what the curriculum committee planned.

PRE-SCHOOL EDUCATION

J. W. GETZELS

Let me say at once that I have not myself worked with pre-school children in the educational setting. But this is not without some advantage in a paper whose primary intent is to raise issues rather than to settle them, for I am not already so committed to a particular theoretic or pedagogic point of view that any other is immediately unacceptable, if not altogether inconceivable.

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That there is a crucial need for change in the educational provisions for the lower class or culturally deprived child hardly bears argument. We need not belabor the point here. Nor is the need an entirely new one, although the wonder and tragedy is that we have just got around to doing anything about it in a concerted way. *Middletown*[1] in the late twenties, *Who Shall Be Educated*[2] in the early forties, *Social Class Influences upon Learning*[3] in the late forties all dealt with this issue. Indeed, more than a generation ago the Lynds showed that at least in Middletown by the time a child entered school he was already typed intellectually by economic status. Although only 13.4 percent of the Business Class children in the first grade were below 90 in IQ, fully 42.5 percent of the Working Class children were below this level in the same grade. The Lynds raised the question then in essentially the terms we are doing today: To what extent was this observed difference in intelligence a reflection of the "modification of native endowment by varying environmental conditions"?

Nor were proposals for doing something special for the lower class child in school lacking. Among the proposed lines of attack were: the curriculum should be altered to take into account the experience of these children, education should be differentiated according to their abilities, the existing curriculum should be enriched to enable the lower class child to catch up with the middle class child, and so on. But what all these proposals had in common was that they attempted to work within the prevailing organization of the schools. Their fundamental intent was remedial rather than preventive—to do something *after* the child was in school rather than *before.*

The Dilemma of Discontinuity

It is precisely for this reason that these proposals seemed only to pose the dilemma rather than to provide a solution. For they neglected to face up fully

to two unavoidable issues. First is the claim for the preeminent impact of early experience, that it is during the early period that the child not only acquires a characteristic set of values, language, and fund of information, but he literally *learns to learn*. He acquires the tools, so to speak, for meeting the problems he will face in school. Second is the claim that the values, language, information, and methods of learning acquired by the middle class child is *continuous* with what will be required of him in school; the values, language, information, and method of learning acquired by the lower class child are *discontinuous* with what will be required of him in school. It is as if the one group obtained a set of tools applicable to the school situation, and the other a set of tools *not* applicable to the school situation, but the school expected the two groups to perform as if they had equally applicable tools and resources.

It is in these terms—the problem of learning to learn and the relationship between pre-school experience and educational expectations—that we may raise the following questions:

1. What is the effect of environment on the development of school-related abilities?

2. How early must the opportunity for school-related experiences be available in the environment?

3. What are the differences in the continuity or discontinuity of pre-school experiences and school expectations between culturally-deprived and non-deprived children?

4. What is the nature of compensatory pre-school education, and what are some of the current procedural issues?

5. What are some of the long-range underlying issues?

I need hardly say that I shall not be able in the pages at my disposal to deal with these questions in any depth. But I have taken my charge seriously: in view of the goals of the White House Conference, it is more important for the paper to open for exploration a wide range of issues than to provide conclusions, recommendations, or attempt to settle any one issue definitively.

Effects of Environment

We may begin with what seems to be the fundamental question underlying the entire problem of cultural deprivation and pre-school education: What is the effect of environment on learning to learn?

We have already cited the study of a generation ago by the Lynds showing a cognitive deficit in lower over upper class children. Studies along this line have steadily increased in number, rigor, and specificity of demonstrated relationship. To mention only a sampling: Irwin[4] found a systematic relationship between mastery of speech sounds in infants 1 to 30 months of age and the occupational status of the family; Milner[5] found a significant relationship between the reading readiness of first grade children and the "verbal environment" at home; Montague[6] found a similar relationship between the arithmetic concepts of kindergarten children and the socio-economic status of their families; and, in a notable series of studies, Deutsch and his colleagues[7] have gone a step further in specificity and shown that not only are there differences in cognitive performance between social-class and race groups but within the groups, a "particular level of cognitive performance reflects certain specific environmental characteristics"; Hess[8] has shown the same relationship for the acquisition of language and the nature of the mother-child interaction. In short, numerous studies attest to the view that the development of both general and specific cognitive abilities—the abilities required for success in school—is determined in many critical ways by the availability of relevant experiences in the pre-school environment.

The Timing of Experience

We may turn to the second question that seems to be crucial: How *early* must the opportunity for the relevant experience be available? Is, for example, the

present school age—the magic number six—time enough? We know very little about this for any specific ability nor, of course, in view of different rates of maturation, for any given individual. Nonetheless, an increasing number of studies are showing that it is the lack of *early* experience that may be most damaging, not only to such psychological abilities as learning but even to such presumably physiological abilities as vision.

The most direct evidence on what we may call the "timing" of experience comes from experiments with animals—experiments that cannot be done with humans. For example, Austin Riesen[9] some years ago deprived animals of light at various stages during their growth. He found that it was deprivation during the early period that resulted in the most serious perceptual deficit. There is, however, relevant if less direct evidence for humans as well. For example, Bloom[10] estimated that the long-term over-all effect of living in a "culturally deprived" as against a "culturally abundant" environment to be 20 IQ points, and hypothesized that this effect was spaced developmentally as follows: from birth to 4 years, 10 IQ units; from 4 to 8 years, 6 IQ units; from 8 to 17 years, 4 IQ units. The rank-order correlation between the hypothesized effects and empirical data from a number of studies was .95, the absolute amount of the observed effects being substantially greater even than the estimates.

But the evidence that is perhaps most dramatically instructive for humans is from the "natural experiments" provided by individuals who were congenitally blind and given sight by surgical operation as adults. As Hebb[11] points out, Senden studied the perceptual behavior of numerous such individuals, and much to his surprise and most people's disbelief, found that these patients literally had to *learn to see*. There was a period when, despite no structural defect in sensory apparatus, these persons could not distinguish between a square and a triangle, a sphere and a cube. They had to stop and count the corners one after another just as a young child does. To perceive these objects as whole figures, with distinctive features immediately evident, was not possible for a long time, not because they could not see—note, they could see and count the corners—but because they had not had the necessary *experience in generalizing* from vision.

It is entirely possible that the normal child goes through a similar process of literally learning to perceive, and that as adults we are able to "see" a square or a triangle at a glance as a result of the imperceptible but complex learning we did as children. Much of what may appear as somehow arising "innately"—perception, language, value, what has been called the child's characteristic "learning set" or what I should like to call his "codes for future learning"—is in large measure acquired through the mediation of appropriate multiple and early experiences. The question is not whether there are individual differences that are innate. The point rather is that given the same potentiality for learning at birth, the availability and timing of experience appear to facilitate or inhibit the expression of the potentiality. And as we have already indicated, there are significant differences in this respect: the relevant experiences tend to be available for some children and not for others. Indeed, the term culturally deprived may be taken to mean lack of availability of such experiences at the appropriate time.

Learning the Codes

This brings us to the third question: What are the differences in the continuity or discontinuity of pre-school experiences and school expectations between culturally deprived and non-deprived children, or more specifically, what is the nature of the differences in the "learning sets" or "codes for future learning" acquired by the two groups?

We have already remarked on such specific differences as are measured by vocabulary, arithmetic, reading-readiness tests and such general perceptual and cognitive differences as are measured by

intelligence tests. Two other salient differences must also be considered in this connection.

There are two general "codes" a child learns through his early contacts with the environment: one is a *language code,* the other a *value code.* The language code gives him the categories for structuring and communicating his experiences. The value code tells him what in his experience is important—worth attending to. In a sense, language becomes the window through which he perceives experience, and values determine what in his experience he will cherish or reject. And it is argued that it is precisely with respect to the character of these crucial codes—the value code and the language code—that the disadvantaged child differs most sharply from the advantaged child and from school requirements.

Explicitly or implicitly, the school requires an *achievement* ethic, with consequent high valuation of the future, deferred gratification, and symbolic commitment. It takes for granted that every child has had an opportunity to experience beliefs that anyone can get to the top, and if he tries he too can get to the top. The future, not the present, is what counts, and one must use the present to prepare for the future. Time therefore must not be wasted—note the vernacular "time is money." It is expected that the child will be able to defer immediate gratification for later gratification through symbolic commitment to "success." Not only are these the values of the school, but they are the values of the environment in which most middle class children are brought up.

In contrast to this, it is pointed out, the lower class child has experienced only a *survival* or *subsistence* ethic (not an achievement ethic) with consequent high evaluation on the *present* (not the future) on *immediate gratification* (not deferred gratification) and *concrete commitment* (not symbolic commitment). Where the lower class child lives hardly anyone ever gets to the top—often one can hardly move across the street. And time is not important or potentially valuable if there is not going to be anything to do with it anyway. The commitment is to immediate and concrete gratification—to the satisfactions of here and now—for what does an appeal to symbolic success mean where success is measured only by subsistence or survival? In short, the lower class in contrast to the middle class child may face a severe discontinuity in values upon coming to school—a discontinuity that may have a profound effect on his behavior toward school, and no less an effect on the school's behavior toward him.

What we have said about value is also applicable to language. The work to which I shall refer is by Basil Bernstein,[12] which is consonant with other studies in this area. He argues that different social strata generate different speech systems or linguistic codes, regulating the selection an individual makes from what is available in the language as a whole. These linguistic codes, which develop early and are stabilized through time, come to play an important role in the intellectual, social, and affective life of the child. There are two language codes: one "elaborated," the other "restricted." In the restricted code, the vocabulary and syntactic structure are drawn from a *narrow* range of possibilities, the organizing elements of the speech are *simple,* and there is *considerable dependence on extra-verbal channels of communication* like gestures. In the elaborated code, the vocabulary and syntactic structure are drawn from a *wide* range of possibilities, the organizing elements of the speech are *complex,* and there is *little reliance on extra-verbal channels of communication:* the message must be given and sought in the verbal material itself.

As may already have been anticipated, a middle class child is likely to experience and acquire an elaborated language code; a lower class child a restricted language code. But the school is of course predominantly concerned with elaborated language codes. Accordingly, in language as in values, for one child school is *con-*

tinuous with his early experience, for the other child school is *discontinuous* with his early experience.

The Pains of Failure

It is often said that the lower class child fails in school because he is apathetic or aggressive. Without denying this, some would turn it around and raise the further question whether he is not also increasingly apathetic and aggressive in school because he fails. For what can be more tormenting than to be faced day upon day with a situation you cannot handle and yet may not leave on pain of severe punishment? Insofar as the pre-school experiences of the lower class child have not prepared him for school, school can only be a source of frustration: he is neither ready to do what is required nor can he escape. The reaction to this type of frustration is hopelessness and rage. In school, the hopelessness is manifested in apathy, i.e., psychological withdrawal from the source of frustration, and the rage in aggression, i.e., physical attack upon the source of frustration. Ultimately, not only does this failure lead to dropping-out with consequent unemployability, but the patterns of apathy and aggression maintained over the compulsory school years often become stabilized into deep-seated maladjustment and delinquency. From this point of view, compensatory pre-school education may be seen as an effort to bring the experience of the lower class child into greater continuity with the expectations of the school—expectations that presuppose middle class value and language codes for its children—not only in order to increase learning but to avoid the frustrating consequences of the discontinuities between the home and the school.

Manifold Programs

We may turn now to the fourth question we posed: What is the nature of the current programs in compensatory pre-school education?

The number and diversity of compensatory pre-school projects are growing so rapidly that it is hazardous to say anything about *the* nature of the programs without risk of over-simplifying and being out of date almost at once. It is more instructive to speak of *alternatives* in the current undertakings. For example, within walking distance of the University of Chicago are several separate programs. One is in a long established predominantly middle-class nursery. The proposed curriculum includes free play, group games, show and tell, and neighborhood trips—activities which do not differ from what is done regularly in this nursery. Another is in the local public school, which has never dealt with nursery or pre-kindergarten children—middle or lower class. Among the stated aims are to give the children experience with the tools of learning—pencils, crayons, books, etc.—and to develop their readiness for regular school activities. A third program, which grew out of a volunteer college student project, was designed specifically for **culturally-deprived** children. The staff was selected on the basis of experience in pre-school education with such children, and there is heavy emphasis on auditory and visual discrimination, rhythmics, and self-expression. A fourth program is in a local Montessori School, and will presumably be influenced by its philosophy and methods. From among the Montessori activities are included " 'practical life' projects (e.g., buttoning, tying, cleaning dishes, polishing copper, peeling carrots)" and there is emphasis on the ability "to look at, *see,* and handle materials." Only one of the programs was in existence a year ago.

The diversity and recency that we have seen here in miniature are representative of current pre-school programs at large. An inventory of compensatory education programs—exclusive of Project Head Start—shows pre-schools in operation in some 70 cities.[13] Over half of these have been established within the past year or two. There is diversity in every aspect of the programs: the auspices may be as various as the public school system itself, a national welfare agency, or the local junior league; and,

the personnel may range from two teachers, a social worker, two psychologists and a nurse for 32 children to six teachers and 36 teacher-aides for 240 children. The purpose of one program is said to be "to give the children of the poor the *same* experiences that are provided routinely to children of middle and upper-income families: vocabulary, verbal expression, cultural experience, and appreciation of learning"; but, in another the focus is on very different and more primitive activities: "development of listening skills and visual discrimination; provision of activities which engage touch, taste, and smell; and teachers will work with parents in orienting them toward the program and having them assist the development of the child."

Despite the variability in specific activities, the programs may be classified at least for analytic purposes into three broad categories. Explicitly or implicitly, in one the predominant assumption is that the observed deficiencies of the culturally deprived child are more superficial than fundamental—the differences are in quantity rather than in kind—and the pre-school experiences that are needed are *supplementary;* from this point of view, if a nursery or pre-school activity is good for the middle class child it is good also (if perhaps at some simpler level) for the lower class child. In the second, the assumption is that the significant deficiencies reside in the lack of familiarity with school-related objects and activities—say, pencils, books, the use of crayons, following directions—and the pre-school experiences the culturally deprived child needs are predominantly *academic-preparatory*. In the third, the assumption is that because of powerful environmental effects, the culturally deprived child becomes fundamentally different in self-concept, language, value, and perceptual process; from this point of view neither the supplementary nor the preparatory activities in themselves are sufficient: what is required are *specialized programs* that will *compensate for,* in the sense of *counteract,* the deleterious environmental effects.[14,15] This diversity raises an obvious and serious issue: Which of the alternatives is likely to be more fruitful than another? It is not that a categorical answer can be forthcoming at once, but dealing with the issue systematically may lead to criteria for selecting activities and evaluating outcomes rather than proceeding by hit or miss.

Comparisons Needed

In view of the theoretical and procedural differences, it might be expected that observations to guide our choice would be abundant. This is unfortunately not so. There are no systematic comparisons of the relative effectiveness, say, of what we have called the supplementary and academic-preparatory procedures. There are no systematic comparisons of the relative effectiveness of different points of intervention within what we have called the specialized programs. Two relevant observations from the research that is available so far, however, can be made. One is that pre-school programs do tend to be effective in raising intelligence test scores, vocabulary level, expressive ability, arithmetical reasoning, and reading readiness. Independent reports by Bereiter,[16] Gray,[17] the Ypsilanti Public Schools,[18] and the Racine studies[19] all point to one or more of these effects. This is enormously encouraging, even though they used different procedures and it is impossible to say what it is specifically in the pre-schools that accounts for the positive effects. The second observation is less encouraging. Although Deutsch[20] has reported differences in the fifth grade favoring children who attended pre-school over those who did not, two recent experimental studies that have followed their pre-school and control children through kindergarten and first grade report that the initial differences tended *not* to be maintained in the regular school situation. The Racine study states bluntly:

> Potentially, the most useful conclusion which can be drawn from these data is that "one shot" compensatory programs would seem to be a waste of time and money. The fact that differences between groups disappeared and

that in several areas the rate of growth of both groups regressed during the traditional first grade year supports this contention.

If these implications are supported by future research it would seem that curricular revision over the entire twelve year school curriculum is a necessary part of any lasting solution to the basic problem of urban public school education.

It must be emphasized that this is but one study done with only a handful of subjects at the kindergarten rather than earlier period. Nonetheless, the issues raised by the data, tentative as they are, must be taken seriously: Assuming that compensatory pre-school education is effective during the pre-school period, what provisions need to be made in the regular school and in the home to maintain the effectiveness?

The most extensive pre-school undertaking is of course Project Head Start. It represents the awakening of the American conscience to the nation's most serious problem, and we can take pride that, a generation hence, no one will be able to say, as we are about a generation ago, that although the problem was recognized nothing courageous to solve it was attempted. But the very significance and massiveness of Head Start raises in urgent form all the issues implicit in the preceding discussion: What, for example, are the criteria for selecting activities from the available alternatives? On what basis will the effectiveness of what is being done be evaluated? Granted, it is difficult to see how any educational harm can come to the children, and there may be residual gains in medical care. . . . But this too needs to be considered: May not long-term mischief be done to the idea of compensatory pre-school education if the possible lack of positive educational effects from this type of "one shot" program are immediately attributed to what some like to think is the inevitable failure of lower-class parents to cooperate, the immutability of the abilities of the children, or to the conception of compensatory education itself, rather than to possible shortcomings in the operation of the specific programs? To pose such a question is not to derogate what is being undertaken, but it does raise the issue as to whether a greater base in conceptualization, long-term planning, and evaluative research than is presently the case is not indicated for the future.

The Problem of Transformation

We turn finally and briefly to the last question: What are some of the broad underlying issues in the field?

We have been dealing with such procedural problems as the choice of alternate programs, the manner of evaluating outcomes, the selection of teachers and activities. These represent issues of means assuming the ends—the ends being, to put it most sharply, to transform the pre-school lower-class child in accordance with the requirements of the prevailing school. But there are at least two troublesome issues with respect to this that need examination. The first is concerned with the nature of the transformation we are prepared to impose on the culturally deprived child, and the second with the character of the school that will presumably serve as the standard for the transformation.

We must go back to the definition of "culturally deprived." The concept of cultural deprivation assumes that there is a normative or dominant middle-class culture, and that some children are deprived of experience with *this* culture (not *all* culture). From this point of view, the middle class child is also culturally-deprived—deprived in relation to the values and experiences of *another* culture, say intimacy and cooperativeness as against aloofness and competitiveness. It is a *relational* not a quantitative concept, and cultural deprivation in the present context means only deprived of middle-class values, not necessarily good or plentiful values, and more especially of the values and experiences needed to get along in the school as it is currently constituted. It does not mean that the culturally deprived child necessarily has

fewer values, nor that he may not have other values and experiences that are *assets*.

And this raises the first issue. Assume with Frank Riessman[21] among others that the lower class child *does* have certain assets in the way of values and experiences which are not only functional in his environment but are of intrinsic worth: "the cooperativeness and mutual aid that mark the extended family; avoidance of the strain accompanying competitiveness and individualism; equalitarianism, informality, and warm humor; freedom from self-blame and parental overprotection; the children's enjoyment of each other's company, and lessened sibling rivalry; the security found in the extended family and in traditional outlook." What will be the effect of imposing contrary middle-class attitudes such as achievement-anxiety on these assets and the child's functioning in his environment, especially if his environment remains as it is? Can a program of compensatory education for the disadvantaged even at its best be salutary in any ultimate way without altering the disadvantaged environment giving rise to the disadvantaged child? Will the ravages of poverty and discrimination on the child's conception of life and of himself disappear if Appalachia and Harlem are permitted to remain as they are?

The second issue is not unrelated to the first. Compensatory early education is predicated on the criterion of success in school as the measure of fruitful socialization; the children are to be raised according to the modes of behavior and thought rewarded in the classroom. But there are those who would say that the demands of the present elementary school are themselves contradictory: on the one hand, the school rewards complacency, conformity, and docility, and on the other, it implies later success through ingenuity, daring, and competitiveness. And more, it is defective educationally: it can hardly serve as a model. Thus, to mention only three or four observers reporting from different points of vantage, Bruno Bettelheim[22] suggests that "learning inhibitions can come from a child's desire for honesty and truth, and from trying to succeed in terms of his own life experience and of clear-cut desires and values"—do Sally, Tom, and Puff represent "honesty and truth in the light of his own experience" for the Negro child or for that matter for any child; Jules Henry[23] shows how relentlessly honest feeling and originality are stamped out in the elementary school by the prevailing rivalry which is at once stimulated and feared by the teacher herself; Patricia Sexton[24] points out how the femininity of the school, to use her term, "emasculates" the boys not only affectively but cognitively; and Edgar Friedenberg[25] and Robert Hutchins[26] from their very separate framework raise the same issue: is the middle-class social and intellectual way of life as reflected in the school really a Given of the Natural Order, so to speak? In the face of this, one must ask: Can the standards of today's school be taken safely as the model for the transformation of the culturally-deprived child? Is this what we want for our children, or should not some thought be given as well, even in the present context, to the transformation of the school itself?

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ADAPTING TEACHER STYLE TO PUPIL DIFFERENCES: TEACHERS FOR DISADVANTAGED CHILDREN

MIRIAM L. GOLDBERG

It has become a cliché to state that the major effects on pupil learning result from what goes on in the classroom. We recognize that what the teacher and the pupils do during the five or six hours a day when they are in direct contact with

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each other is the "compass of learning." And yet, until recently, little of our research has addressed itself to the teaching process. We have studied the achievement of pupils under various methods of instruction, we have described and theorized about the personality characteristics of teachers, we have explored various theoretical formulations about the nature of learning, and the effects of varying the administrative deployment of pupils and more recently of teachers have been investigated. We have examined the effects of class size, the functions of the administrator, the guidance counselor and other adjunct personnel of the school. But we still could not describe with any degree of accuracy what teaching is all about, what the teacher actually says and does in the process of teaching, and what effect this has on pupil learning.

Although little may be known about the teaching process in general, even less information is available on the "fit" between particular styles of teaching and the learning of particular pupil populations. This question looms especially large as one considers the problems of teaching children from depressed or disadvantaged areas; pupils who, thus far, have not been effectively "reached" by the teaching procedures to which they have generally been exposed. That various teaching procedures now in use are more or less effective with pupils from more affluent or academically motivating environments is undoubtedly true. But these same procedures, typically learned in teacher education programs, have rarely proved effective with disadvantaged youngsters.

Three assumptions underlie this paper: The first maintains that a pupil's learning is, in large measure, a function of the kind of teaching to which he is exposed. Thus, the extent to which a pupil masters a given set of academic tasks reflects not only his aptitudes and attitudes, but also the appropriateness of the particular approach by which he is taught.

The second assumption, implied by the title, rejects the notion of the universally "good" teacher, equally able to adapt his style to varying pupil populations, and substitutes a conception of a variety of "good" teachers, differentially suited (by temperament and training) to teaching differing groups of students.

The third assumption proposes that children from culturally disadvantaged backgrounds though highly variable, nevertheless represent a describable pupil population in need of teachers who are uniquely "good" for them.

The first portion of this paper presents some of the evidence in support of the first two assumptions, citing studies which point up the variety of teaching styles and their effects on pupil achievement in general and on the achievement of specific categories of pupils in particular. The remainder of the paper proposes a hypothetical model of the successful teacher of disadvantaged pupils and suggests how such a model may be approached.

Studies of Teacher Performance

The last decade has witnessed a number of efforts to study the processes of teaching. The first consideration of most of the studies has been to describe and classify what the teacher and the pupils say and do during a class session. Some of the investigations have gone beyond the descriptive material into a study of the relationships between the teacher's style of performance and the learning patterns of children.

Categorizing Teacher Style

A variety of more and less structured classroom observations have yielded various classifications of teacher style. For example, Flanders (1960) classified teachers as those who more often exert "direct influence," through lecturing, giving directions or criticizing student's work, and those who more often exert "indirect influence" through clarifying feelings, providing praise and encouragement, developing and making use of student ideas and asking questions.

Medley (1962) divided the teacher's performance into three broad categories:

(1) his means of controlling the class, (2) his approach to the content, and (3) the interpersonal climate he creates. In the "control" category fell such behaviors as eliciting large amounts of pupil response, maintaining a high degree of order or permitting a high degree of pupil initiative. "Approach to content" included such procedures as emphasizing individualization or using interesting, original devices and materials. The "class climate" category included the teacher's consideration for pupils' problems and feelings, the degree of support given to pupil statements and responses, and the frequency with which reproof and criticism were used.

More clearly defined, perhaps, are the three dimensions of teacher style suggested by Ryans (1963). The first is a personal dimension ranging from "friendly-warm-understanding to aloof-restricted." The second is a task dimension, ranging from "responsible-organized-business-like to unplanned-slipshod." The third describes the dynamic quality of the teacher's performance from "stimulating-informative to dull-routine." These categories are similar to those suggested by Warrener (1962), who drew his observations from social behavior in non-teaching leadership situations. His categories were: (1) "objective" work orientation, (2) "social relations" orientation, and (3) "subjective" personal, expressive orientation.

The dimensions suggested by Ryans are sufficiently independent of each other so that a teacher may be at a different point along that scale on each one. For example, one teacher may be characterized as warm, businesslike, and stimulating; another as warm, business-like but dull; or one might even be seen as aloof, business-like and stimulating. Each dimension represents a continuum, and for most teachers there will be a characteristic point along its baseline.

Categorizing Verbal Behavior

The studies mentioned above have concentrated on the teacher's stance, his characteristic mode of behavior, the flavor of his performance, and his attitudes toward his task. Little attention was paid to the handling of content, the skill of questioning, the organization of material, and the like. For aspects of the teacher's work which relate to the processes of handling content, one must turn to the work of B. Othanel Smith and his associates (1963). Here, the concern has been with the "logical operations" of teaching; with discovering ". . . how concepts, norms, laws, etc., are introduced, analyzed and manipulated in the course of instruction" (Smith et al., 1963, p. 2). Using large samples of electrically taped classroom sessions, the verbal behavior of both teachers and pupils was categorized into 13 "major acts"—such as defining, stating, reporting, opining, explaining, comparing and contrasting, classifying, etc. Such analyses made possible the description of a teacher's characteristic performance through quantifying the frequency with which his verbal behavior falls into one or another of the various categories. Eventually, it should become possible to discover to what extent the differential frequencies are a function of a pervasive style of teaching, a response to the inherent logic of a particular subject or phase of it or a reflection of the particular group of pupils being taught.

Relating Teacher Style to Pupil Achievement

But the analyses of teaching styles and logical operations, significant though they may be in supplying needed systematic information on the teaching process, have only just begun to shed light on two crucial questions: (1) What difference do these ways of teaching make? Do pupils, in general, come out with different kinds or amounts of learning when taught by teachers using one or another approach to teaching? (2) Does a particular teacher's style have more or less the same effect on all pupils under his tutelage? If not, are there ways of determining the characteristics of pupils who would fare better under one teaching style than under another?

Working with junior high school classes in mathematics and social studies, Flanders (1964) related teaching style to pupil achievement and degree of dependence. He reported that when learning goals were unclear, as in a new task, lecturing and giving directions increased the dependence of students on the teacher and tended to lower achievement. In general, he found that patterns of "indirect influence" resulted in greater content mastery and in more positive attitudes toward school than did the "direct influence" procedures. However, in classes designated as superior—where pupils' achievement was greatest and attitudes toward the teacher were most favorable—there was an element of flexibility in the teacher's influence patterns not found in below-average classrooms. In superior classes, teacher behavior was less predictable, "shifting from domination and close supervision" on some occasions, to "indirect participation" at other times. These studies also suggest that for pupils who tend to be dependent upon teacher direction and unable to pursue work on their own, a high level of "direct influence"—lecturing, criticizing, giving directions—tends to be associated with lower achievement than is apparent when more independent pupils are exposed to similar "direct" teaching procedures.

In their study of "The Language of Teaching," Bellack and Davitz (1963) analyzed tape-scripts of high school social studies classes studying a unit in economics. They identified four basic Pedagogical Moves: structuring, soliciting, responding, and reacting which "describe the verbal maneuvers of students and teachers . . . and set the framework for the analysis of meaning communicated in the classroom." Although the first phase of this research is largely descriptive, as are most of the other analyses of the verbal behavior of teaching, the data analysis will be used not only to categorize and describe but also to relate the linguistic variables to student learning and attitude change. In subsequent phases, Bellack plans to address himself more intensively to studying the functions of the various Pedagogical Moves—the recurring patterns or "cycles" of moves characteristic of a given teacher, and the relation between patterns of teacher verbal behavior and student performance.

Of special interest to the major concern of this paper is the work of Heil and his associates (1960). They hypothesized that "in a particular class, the teacher's behavior will evoke a certain amount of achievement with children of a given set of feelings and level of intelligence." On the basis of assessment instruments, 5th and 6th grade pupils in a New York City school were divided into four personality categories: (1) *Conformers*—characterized by incorporation of adult standards, high social orientation, control over impulses and emphasis on mature behavior; (2) *Opposers*—showing disturbed authority relationships, oppositional trends, pessimistic tone, intolerance of ambiguity and disappointment and frustration as central dynamics; (3) *Waverers*—described as anxious, ambivalent, fearful, floundering and indecisive, and (4) *Strivers*—showing marked drive for recognition, especially in school achievement, and exhibitionistic needs. The teachers were divided into three personality types—the *Turbulent,* the *Self-controlling,* and the *Fearful.*

Pupil achievement was contrasted for each pupil category under each teacher type. In general, when achievement was controlled for I.Q., the "strivers" achieved most, followed by the "conformers," then the "opposers" and showing least gains, the "waverers." Neither the "strivers" nor the "conformers" were significantly affected by teacher personality; but for the "opposers" and the "waverers," teaching style made a significant difference. For the last two groups, the "self-controlling" teachers, who maintained an orderly, workmanlike class, focused on structure and planning—but, at the same time, showed a sensitivity to children's feelings and emphasized interpersonal relations in the classroom—were most effective. The "turbulent" teachers—characterized by greater concern for ideas than for people, free-

dom of expression of strong feelings and attitudes, little patience with routine tasks, "sloppiness," and inconsistency—were more successful than either of the other types in teaching math and science. In the other subjects their success was limited to "strivers" and "conformers." The "turbulent" teachers were least successful with the "opposers" who evidenced the highest intolerance of ambiguity. The "fearful" teachers—anxious, dependent on the approval of supervisors and of the children, unable to bring structure and order to the teaching task, and highly variable in their behavior—were uniformly ineffective with all kinds of children except "strivers," who fared well regardless of the teacher.

Teachable Groups

A quite different approach to the study of the relationship between teacher style and pupil learning is found in Thelen's (1961) recent work on the formation of "teachable" groups. Since the 1930's repeated efforts at assessing the effects of "homogeneous" versus "heterogeneous" grouping or, in more modern parlance, broad and narrow ability range groups, have produced meager results. The findings, though apparently inconclusive, are consistent in reporting that in the absence of deliberate curricular modifications, grouping, on the basis of ability, has no significant effects on pupil achievement. But all of the grouping efforts were predicated on the assumption that if the class group is "homogeneous" with respect to intelligence or reading level or achievement in a particular subject, then, *ipso facto,* such a group becomes more "teachable." A teacher in such a group would accomplish more with the pupils than would be the case where the range of ability was wide. What was left out of the equation of "teachability" was the teacher's style of working and his perception of the kinds of pupils with whom he tends to be most successful. From Thelen's (1961) work it would appear that I.Q. or achievement status are by no means the most significant determinants of the teacher's perception of "teachability." Thelen states that, in general ". . . teachers recognize four kinds of students: the good, the bad, the indifferent, and the sick. But the problem is that each teacher places different students in these categories, so that whatever is being judged is not primarily some characteristic of the student" (p. 226). He urges that ". . . the teachable students for one teacher may be quite different than for another, that the fit between teacher and teachable students primarily results in better meeting the teacher's most dominant needs . . . he is able with the teachable class to do more fully what he tries to do with his other classes . . . that successful grouping must take the teacher himself into account" (p. 220). Despite finding few differences in achievement between "teachable" and random groups, Thelen states: "We remain convinced that any grouping which does not in some way attempt to 'fit' students and teachers together can have only accidental success" (p. 221).

Adapting teacher style to pupil differences: teachers for disadvantaged children

A significant implication of the studies of teacher characteristics, teaching process, and teachable groups is the recognition that variations in pupil attainment in the classroom are related to variations in teacher performance, and that a particular teacher affects different pupils differently. We are forced to question the stereotype of the "good teacher" and the "poor teacher," although there may be some few who would prove excellent for all pupils and many more who would be inadequate no matter what the assignment. Most teachers, however, vary in their effectiveness depending upon the characteristics of the pupils they confront, the opportunity to fulfill their expectations for themselves and for their class, the content of what they teach, and the extent to which the school provides them with what they perceive to be necessary facilitations. . . .

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THE CREATIVE PERSONALITY AND THE IDEAL PUPIL

E. PAUL TORRANCE

There is considerable evidence to indicate that creative personalities tend to be estranged by their teachers or bosses and are not liked very well by them. For example, Getzels and Jackson (1) found that teachers preferred students with high IQs but with less outstanding scores on tests of creative thinking to those with outstanding creativity scores but with less outstanding intelligence quotients. I similarly found (9) that this was also true of elementary pupils and teachers. Jex (4) reported a *negative* relationship between the scores of high school science teachers on a test of ingenuity and ratings by their superiors, and Taylor (8) demonstrated that research workers who are most productive, are rated as producing the most dependable information, and publish the largest number of scientific articles are also named by their supervisors as the ones who would be dropped if cutbacks in personnel were necessary.

These and many other indications concerning the dislike of teachers and bosses for creative personalities set me to wondering what kind of concepts teachers have of the ideal pupil. Knowing that teachers consciously and unconsciously reward pupils in terms of their own ideals, I felt that knowledge about teachers' concepts of the ideal pupil might be useful in understanding the problems of creative personalities and in helping them solve some of these problems. On the basis of a survey of the research dealing with the characteristics of the creative personality, Henrickson and I (3) had already examined the significance of findings con-

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cerning the creative personality for classroom discipline, and my associates and I, concerned about the necessity for rewarding creative thinking in the school, had conducted over 20 experiments trying to test some principles for doing this more successfully. In the course of this research (7), it had become evident that teachers are not able to free the creative capacities of their pupils if their own values do not support creativeness. This was dramatically shown when we asked teachers to describe incidents in which they had rewarded creative thinking. It was painfully evident from these data that creative behavior had been punished rather than rewarded. The conflicting values of the teacher simply prevented his rewarding such behavior.

Some Regional Patterns

In approaching the task of finding out what teachers consider an ideal pupil, we were able to make use of a list of 84 characteristics of creative personalities as described in approximately 50 empirical studies comparing the personality characteristics of creative individuals in some field with less creative individuals in the same field. Reducing the list to 62 characteristics and putting them in the form of a checklist, we asked teachers and parents to indicate by a single check the characteristics which they think should be encouraged, by a double check the five characteristics deemed most important, and by a strike-out those characteristics which should be discouraged or punished. By assigning a value of two to double checks, one to single checks, and minus one to strike-outs, an index of desirability was obtained for each characteristic for each group of teachers or parents studied. The 62 characteristics could then be ranked in terms of the values obtained.

Thus far, we have results from 650 teachers in ten different states (Minnesota, Wisconsin, Illinois, Michigan, California, Georgia, Florida, Mississippi, Nebraska, and Hawaii) and six countries outside the United States (Canada, Australia, Germany, Western Samoa, India, and the Philippines). The rank-order coefficients of correlation among the various localities within the United States is very high (around .95). This means that teachers in Minnesota have essentially the same concepts of the ideal pupil as their colleagues in Wisconsin, California, Georgia, and Mississippi. There are, of course, a few interesting differences which reflect important cultural emphases with implications for the development of creative personalities.

For example, teachers in California place a higher value than any other group of teachers on sense of beauty, versatility, adventurousness, vision, and spirited disagreement; they value sincerity and thoroughness rather less. Florida teachers honor energy, industry, and obedience, whereas Georgia teachers place more emphasis on thoroughness. Minnesota teachers want their pupils to be receptive to the ideas of others; Mississippi teachers value the desire to excel, and Wisconsin teachers emphasize the value of being industrious and popular. Nebraska teachers are noteworthy for their emphasis on remembering well, competition, and self-confidence and for their lack of emphasis on curiosity. Negro teachers in Mississippi and Georgia, more than any of the other groups of US teachers, value obedience, having distant goals, and willingness to accept the judgments of authorities; they place less value than other groups on independence in thinking and being well liked by one's peers. They are less punishing of regression and more punishing of spirited disagreement. It must be understood, of course, that no claim is made for the representativeness of the samples.

Although some of the concepts of the ideal pupil seem to hold throughout the world, others vary greatly from culture to culture. For example, remembering well is more highly valued in Western Samoa than in any other culture. Similarly honored are being considerate of others in the United States, being industrious in Canada and Australia, being

persistent and visionary in Germany, and being obedient, courteous, and industrious in India and the Philippines.

But let us center our attention on the ten characteristics most valued by the 650 teachers in the United States. Where appropriate, I shall introduce results from parents and from teachers in other countries. After this, we shall examine the ten characteristics rated as most undesirable and some specific characteristics which have especial significance for the development of creative personalities.

Premium on Conformity

Both teachers and parents in the United States rank *being considerate of others* as the most important of the 62 characteristics included in the checklist. This great stress on being considerate of others certainly identifies one of the reasons why teachers do not prefer highly creative pupils. Research indicates that highly creative people frequently appear to be lacking in this trait. While they may sacrifice their lives in an effort to help others, to serve their country, or to benefit humanity, they often become so involved in the problems on which they are working and consider these problems so important that they do not have time to be polite and to show the consideration of others that is so highly valued in our society, even in military commanders (2). Placing this characteristic at the top of our hierarchy of values may, however, reflect an over-emphasis on conformity to the thinking of others and could be carried to such an extreme that it could work against the freeing of the creative thinking abilities. Insofar as it reflects a genuine respect for the individuality of each person, it may be a different matter. At any rate, the evidence here identifies one area in which highly creative pupils need help in order to become less obnoxious without sacrificing their creativity.

Second, our sample of US teachers placed *independence in thinking* in the second highest position of importance. Since almost all studies of creative individuals stress the importance of independence of thinking, this widely shared value should aid in freeing creative intelligence through teaching. Genuine creative accomplishment, however, requires not only *independence of thinking* but *independence in judgment*. The creative individual must be able to make judgments independently and stick to them, even though others do not agree. Any new idea in the beginning always makes its originator a minority of one. We know only too well that being a minority of one makes one uncomfortable. Thus, independence in judgment takes great *courage*.

I regret to say that teachers in the United States do not give a place of great importance to either *independence in judgment* or *being courageous*. Independence in judgment ranks nineteenth and being courageous stands twenty-ninth among teachers in the United States, lower than in any of the other six countries for which we have data. In fact, it is far more important to teachers in the United States for their pupils to be courteous than to be courageous. It is also more important that pupils do their work on time, be energetic and industrious, be obedient and popular or well liked among their peers, be receptive to the ideas of others, be versatile, and be willing to accept the judgments of authorities than to be courageous. Such a set of values is more likely to produce pupils who are ripe for brainwashing than pupils who can think creatively. As Maslow (5) has pointed out, every one of our great creators has testified to the necessity for courage in "the lonely moment of creation, affirming something new (contradictory to the old)." Maslow describes it as "a kind of daring, a going out in front all alone, a defiance, a challenge." The fright is understandable but must be overcome if any creation is to take place.

Responsible Drive

Strong *determination,* ranked third by United States teachers, is, of course, an important characteristic of the creative person. Someone has suggested that the truly creative personality is likely to be the first to give in but the last to give up.

Although we recognize determination as a "good thing," we tend not to like it when the determination is in opposition to our own will. Thus, determination frequently brings creative individuals into conflict with teachers, employers, and other authorities. This is apparently the kind of determination which characterizes the creative person. He frequently refuses to take no for an answer and drives ahead to test his ideas in spite of discouragement. Perhaps we need to teach some of these determined creative individuals how *to give in* occasionally *without giving up*.

Similarly, creative individuals are never content to work a 40-hour week. They cannot stop thinking and working. In spite of his great *industriousness,* however, and the intensity with which the creative child works, his teachers may regard him as a daydreamer, as lazy, or as inconsistent. Fellow workers may consider creative adults as lazy loafers, daydreamers, or preoccupied with their work. Many highly creative persons do not seem to be industrious because they spend some of their time sitting and thinking, not visibly busy. In order to free the creative thinking abilities, we must admit thinking, a quiet activity, to a status of legitimacy.

Likewise, creative individuals are noted for their *sense of humor,* but their sense of humor does not always endear them to their associates. It is likely to win for them such labels as silly, crazy, clown, cut-up, etc. The treatment accorded creative individuals frequently makes them hostile, and this hostility finds outlet in the form of satire, sarcasm, and other biting types of humor. One would hope that teachers in the United States would be able to appreciate the sense of humor in creative pupils and to help them maintain it without becoming offensive through excessive silliness or hostility. Many creative children need help in reducing their hostility while still maintaining their aggressiveness, independence of judgment, and courage.

The high place assigned to *curiosity* by American teachers is encouraging. Curiosity is an important element in the creative personality and in the creative process. In our studies (6), we have identified the curious child as the one who,

The creative personality and the ideal pupil

1. Reacts positively to new, strange, incongruous, or mysterious elements in his environment by moving toward them, by exploring them, or manipulating them;
2. Exhibits a need or desire to know about himself and his environment;
3. Scans his surroundings seeking new experiences, and
4. Persists in examining and exploring stimuli in order to know more about them.

I have had some interesting experiences when I have asked teachers to evaluate their pupils according to this description. They tell me that they have never thought of their pupils in this way before this. When asked to nominate the five most and five least curious pupils in a class, teachers complained that they had to put some of their "best" pupils in the low category. One teacher said, "I feel real bad about putting some of my best students in the low group. They are the best I have in arithmetic and spelling especially. They are not curious, though. They never ask any questions and learn only what I tell them to."

Just as they are curious, creative persons are extremely *sincere*. In this respect, the creative child is likely to find approval from his teacher. Teachers, however, must be careful to pay more than lip-service to sincerity by showing genuine respect for this quality when it occurs, and it is quite difficult for teachers to refrain from punishing sincerity when the sincere thoughts expressed are not the clean and holy ones that we officially approve. Here is a major problem for both teachers and parents in the cultivation of creativity.

Another problem grows out of the fact that the creative child or adult sometimes does not appear to be *courteous*. He may be too busy to be courteous—if not too busy with his hands, too busy

with his mind. Since courtesy is so highly valued in our society, we may have to help the creative child to behave more courteously so that he may survive. Courtesy occupies an equally important place in the concept of the ideal pupil of teachers in India, Canada, the Philippines, and Australia.

Promptness is also highly valued in our society, and this frequently involves the creative person in difficulties. Because creativity requires that one permit one thing to lead to another, it often entails the busy pursuit of some exciting and promising idea instead of the meeting of some deadline which is perceived as comparatively unimportant. Teachers need to recognize that there are times when a person may strain mightily for an idea and wish fervently to think of a new idea and still fail through all conscious effort. Then suddenly it just seems to "happen." The tyranny of the clock is a mighty enemy of imaginative thinking. Knowing of no way to escape it, I am happy to find some teachers who are flexible enough at least to lighten its imperiousness.

Although the United States is said to be one of the most clock-oriented countries in the world, it is interesting that parents rank *doing one's work on time* in sixteenth place, compared with ninth for teachers. Teachers in Germany, Canada, and Australia, however, clearly value this characteristic less highly than do US teachers.

Finally, creative individuals are notorious as *self-starters*. It is encouraging that teachers honor this characteristic to the extent that they do. One wonders, however, how much support most teachers give the true self-starter, the one who does not pursue the things his teacher tells him to learn and to do. The kind of self-starting which most of us admire is of a sort which we suggest.

Only German and Canadian teachers and American parents honor this self-starting ability as highly as do US teachers. Negro teachers in the United States and teachers in Samoa, India, Australia, and the Philippines rank this characteristic near the middle of the total list.

Punished Characteristics

Now let us skip to the bottom of the rankings and examine the ten characteristics which are most frequently punished or discouraged by teachers.

Highly creative individuals *regress occasionally,* appearing to be childish, naive, and playful. Nevertheless, this tendency seems to be essential to the creative personality. Because it is apparently irritating to teachers, we may have to help children to handle this characteristic in such a way that it will make them less obnoxious to others. Teachers may also need to be somewhat more accepting and understanding of this characteristic in creative children. In one of our studies, we found that elementary teachers rated highly creative pupils as less studious and hardworking than their more highly intelligent but less creative classmates. It is interesting, however, that these same highly creative children achieved as high scores on standardized achievement tests (Gates Reading and Iowa Basic Skills) as their high IQ classmates in spite of the fact that their average intelligence as measured by the Stanford-Binet was 25.6 points lower. Such youngsters seem to learn through activities which adults define as regressive or "playing around."

On the other hand, creative individuals live with great intensity; they may be strongly devoted and committed emotionally to an idea or cause, and they often have great openness and awareness. This frequently marks them as being *emotional* or irrational, characteristics which have traditionally been discouraged by education. Creative individuals, however, have learned to accept, value, and use their irrationality. It is apparently the very basis for many of their greatest achievements. The conflict of values here needs to be reconciled if we are to free creative intelligence through teaching.

Despite their intensity, many creative persons are bashful and *timid*—for very good reasons. While some of the world's most creative persons are notoriously shy, their timidity is likely to be confined to their social relationships; they tend to be unusually bold in developing, testing, and

defending their ideas. Again, the truly creative person may be the first to give in but the last to give up, and the timidity of the creative person seems to be of this type.

Nevertheless, creative individuals, while timid, tend to be *critical of others.* The productively creative individual is quite constructive in his criticism, but to free creativity, teachers may have to help pupils quite explicitly to become more constructive in their criticism. In the same way, creative individuals tend to be *stubborn,* posing the problem for teachers of how to maintain pupils' persistence while simultaneously developing their social skills.

In the stubborn pursuit of independent thinking, the creative individual may at times appear to be *negativistic.* Although he is actually likely to be more open to the suggestions of others than less creative people, he is frequently unwilling to take no for an answer, a characteristic which stood out in my own study of American jet aces, a group whom I regard as highly creative. Many teachers interpret this kind of behavior as being undesirably and irritatingly negativistic.

In a similar vein, the highly creative individual may at times seem haughty and self-satisfied, bringing upon himself the dislike of peers and superiors. Because he develops novel ideas which may run counter to accepted notions and practices, the problem may be one of accepting this characteristic but helping the individual to become less annoying in displaying it. A comparable difficulty arises because the productively creative individual is fault-finding, although usually in a constructive way. By definition, the creative individual must challenge established ways of thinking and be able to perceive the defects, the gaps in knowledge, the missing elements. He almost always has some "thorn in his flesh."

Finally, some creative children may appear to be *domineering,* especially when they are creating ideas, and they have an unusual talent for *disturbing existing organization* wherever they find themselves. This, of course, is disturbing to teachers; it ranks lowest or next-to-lowest in almost all the cultures thus far studied. I believe that this is an essential characteristic of the creative thinker and that if we are to free the creative thinking abilities to develop, we must learn how to accept it, guide it in productive directions, and exploit its values for stimulating learning and thinking in the classroom.

Ideals Without Creativity?

Obviously, each teacher needs to ponder the consequences of his ideal of the good pupil. In what ways does it free or shackle the development of the creative abilities of his pupils. It is well to remember with Plato that "What is honored in a country will be cultivated there." Mr. S. Beaty Tanner of Dayton, Ohio, to whom I recently reported some of these observations, reflected upon them and composed a very thought-provoking little statement which he and I have entitled "The Saga of the Declaration of Independence." I offer it as a challenge to thought among all educators:

> Once upon a time, before they knew that the ideal pupil is one who above all is courteous, obedient, popular, and receptive to the ideas of others—independent in thinking but coming to no judgments contrary to those of teachers or parents which might put him out of step with contemporary thought and make him maladjusted, insecure, and unloved—there were some men who had been reared without the advantages of present conceptions of what makes a good student and a good citizen.
>
> These odd-balls thought up and wrote a paper they called "The Declaration of Independence"—quite an original document at the time. And what do you think they did next? They signed their names to it, knowing full well that they would be killed if the war associated with it should fail! And their soldiers were farmers, trappers, and smalltown men, all expecting to beat the professional soldiers of the King of England, redcoated men who knew the rules and obeyed them as they should. Should they lose, as was probable, many of the Declarers would die, and those who weren't killed would certainly

make the King and the people of England dislike them.

Well, the outcome broke all the rules, but they won—after a hard fight, and one fought not at all in conventional ways.

That is how this United States got started. Of course, we have improved it a lot since then. Everything now is happily standardized. We have security and can buy everything with a small down payment—except the wholehearted trust, friendship, and support of new nations like ours back in 1776.

I wonder why that is?

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SUGGESTIONS FOR FURTHER READING

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Taba, H., "Cultural Deprivation as a Factor in School Learning," *Merrill-Palmer Quarterly,* Vol. 10, No. 1 (January 1964), pp. 147–159. This article provides an overview of a problem of great concern in American education.

11

THE CHILD AND HIS CULTURE

A **culture** is a way of life, and a child's culture strongly modifies his values, his mode of dress, his manners, his speech —every aspect of his life. Every American who treks around the globe is made acutely aware of cultural differences. However, he may also become aware of cultural differences merely by going to another section of his own city. Or he may pick up any book published several decades ago and find that many of the "props" involved in the setting seem strange and remote. Cultural variation, in fact, is a function of changing times as well as differences in geographical location.

One of the best ways to attain perspective on our own children is to study how children and child-rearing have varied down through the years and around the world. These questions have been treated so far chiefly in terms of specific theories and modes of child-rearing. For instance, histories of child-rearing indicate irregularly alternating periods of permissiveness and strictness, of perceiving the child as a helpless dependent or as a little man. In any case, whatever the aspect of child life studied in longitudinal research, one shortly perceives how integrally related it is to the times. The article by deCharms indicates how the content in school books since 1880 has corresponded with changes in the economy, suggesting an interacting influence. With the collaboration of Mr. Gerald Moeller, and through the application of projective test data to children's readers, Dr. deCharms demonstrates dramatic changes in cultural values that have taken place. Dr. deCharms is Professor of Psychology and Education, Washington University, St. Louis; and Mr. Moeller, Acting Director of the Federal Relations Program in St. Louis.

Sociocultural factors—those related to a society and its culture—may also be studied **cross-sectionally** in cultures around the world. Such studies help to determine which behaviors appear to be universal and which specific to a culture. They give some idea of the flexibility of human nature and lend perspective to our own child-rearing practices. The study by Irvine describes a culture that is Western, yet unique. Everyone in this country is personally acquainted with many Jews, and hence in a position to contrast Jewish life in our own culture with Irvine's description of Jewish life in Israel. Dr. Irvine makes the following interesting comments about her study:

> [I became interested in this research for these reasons]: (a) Rumours of the **kibbutz** system seemed to constitute a challenge to test Dr. John Bowlby's hypotheses concerning the trauma of mother-child separation in the early years. (b) A visit to Israel provided the opportunity to learn more about the system. (c) While I was working at the Lasker Centre, Jerusalem, Dr. Bowlby asked us to gather material for

him, in connection with the book he was then preparing, *Maternal Care and Mental Health*. . . . Also, I spent 14 years with Dr. John Bowlby at Tavistock Clinic in London.*

Of course, modern cultures are not homogeneous in pattern; they are a blend of subcultures that nevertheless share certain values and patterns. While subcultural influences may depend on many factors, including section of the country and type of community, whether town, rural area, or suburb, the one most often treated in developmental research is social class. Many investigators insist that the gap between social classes is narrowing, but others believe that distinctions remain highly significant. Americans generally are best aware of the various shadings of middle- and upper-class life; few are aware of how the upper-upper or the lower-lower class lives. Dr. Pavenstedt, who is Professor of Child Psychiatry at the Boston University School of Medicine, analyzes differences in child-rearing practices in these two segments of American society and concludes that highly significant differences distinguish them. In general, the upper lower-class families are organized; the very low-lowers, disorganized. Pavenstedt concludes that children of these disorganized families require special help, and she makes general recommendations. However, her chief aim is to verify and call attention to these children as a special classification of the disadvantaged.

Our last selection, by Dr. Richard T. Sollenberger of Mount Holyoke College, Massachusetts, concerns reasons for the low delinquency rate among Chinese-Americans. Dr. Sollenberger's conclusions are based on living among and interviewing mothers in New York's Chinatown. Especially because of our rising delinquency rate and the current concern with crime, it seems desirable to identify factors in family life conducive to creating law-abiding citizens.

What is missing here, and hopefully may one day be supplied, are readings projecting today's child into the future. What sort of readjustments in child life may be required if men are discovered on other planets? What will be the effect on children if human life should ultimately be produced in the laboratory? What is the best way to prepare today's children for the altogether different world that a fast-moving technology will project upon us mere decades from now? The editor found no articles that satisfactorily filled this gap; but perhaps the students who use this book may stumble upon such writings. Certainly it would be helpful if we tentatively projected our picture of the child, and factors impinging upon him, into the future, so that we might better plan for him today.

*Personal communication to editor.

VALUES EXPRESSED IN AMERICAN CHILDREN'S READERS

RICHARD deCHARMS AND GERALD H. MOELLER

Hypotheses

The present study is an attempt to plot the incidence of achievement and affiliation imagery and moral teaching in

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a sample of children's readers from 1800 to the present. In addition, achievement imagery is to be related to data on the number of patents issued per population.

Hypothesis I.

The incidence of achievement imagery in a sample of children's readers selected over the period 1800–1950 will decrease over the time period.

Hypothesis II.

The incidence of affiliation imagery in the same sample of readers will increase over the time period.

Hypothesis III.

The incidence of moral teaching in the sample will decrease over the time period.

Hypothesis IV.

The incidence of achievement imagery will be positively related to the number of patents issued, corrected for changes in population.

The hypotheses assume, with Riesman, that the nineteenth century in the United States was dominated by the inner-directed character type. Riesman is not specific as to dates, but it would appear that the early period of the century witnessed the transition from the tradition-directed character type and that the United States has recently been in transition from an inner-directed phase to an other-directed phase.

Method

A bibliography of reading textbooks with copyright dates ranging from 1800 to 1952 was compiled. An attempt was made to procure at least four books from each 20-year period beginning in 1800. Readers were excluded which were not in wide use[1] during the period or which were used by religious affiliated schools. In the more recent periods from which more than four books were available, the choice of books was made randomly. In the periods in which fewer than four books were available the sample from each book was enlarged insofar as possible. Generally, the sample from each book was obtained by scoring every third page.

It was found that the number of words per page was sufficiently similar throughout the total sample to allow use of the page itself as the scoring unit. In order to equate for number of pages available the score was the number of pages containing imagery per 75 pages sampled. A raw score was thus computed for every 75 pages sampled (i.e., 25 pages scored).

The readers chosen for the study were, generally speaking, at a fourth grade level. During the nineteenth century many readers were designated in ways which had no relevance to grade level or, as in some cases, grade level was quite different from that of contemporary American readers in which the vocabulary is based on standard word lists. In some instances it was necessary to use the Dale and Chall (1948) formula[2] for predicting readability to determine whether the readers might be allowed in the study.

The pages selected from each book were scored independently by two scorers as to whether the page contained (*a*) achievement imagery, (*b*) affiliation imagery, or (*c*) a category called moral teaching. Achievement and affiliation imagery were scored according to the procedure outlined in Atkinson (1958). The subcategories usually scored in this pro-

[1]Evidence of "wide use" was fairly easy to establish in readers published after 1850 since the McGuffey readers and the readers of the major book companies enjoyed national popularity as official texts of large school systems. Prior to 1850 Johnson (1904) and Nietz (1961) provided lists of historical texts from which to choose. In the first two decades of the sample the only secular texts available were used.

The following criteria were used in this order to establish "wide use": Evidence (often cited in later editions) of number of copies sold; several editions of the same book; and knowledge of use by large school systems.

[2]This readability formula which utilizes a word list and sentence length for determining grade level of reading materials was used because of evidence of its applicability to middle grade reading matter and high correlations with other formulae and criteria of readability (Chall, 1958).

cedure were not scored. The category Moral Teaching was developed and defined as explicit or implicit statements of judgment between right and wrong from the point of view of the author. The following (McGuffey, 1857) are examples of items which were scored for moral teaching:

> The little boy took care of his faithful dog as long as he lived and never forgot that we must do good to others, if we wish them to do the same to us (p. 42).
>
> Now that is the way with a great many thoughtless, quick tempered people. They try to find fault with somebody or something else, and get into a passion, and perhaps do mischief, when, if they would but reflect a little, it is their own dear selves who ought to bear the blame (p. 47).

Scorer reliabilities, based on presence of imagery only, were consistently high (Achievement Imagery = 94 percent, Affiliation Imagery = 96 percent, Moral Teaching = 97 percent).

The number of patents issued by the United States Patent Office and the United States Census figures were taken from governmental documents (United States Department of Commerce, 1960) and a patent index was computed by dividing the number of patents granted in a 20-year period by the population reported in the midyear of that period and multiplying by one million. This results in an index of patents issued per one million population during the period.

There are two methodological flaws in the procedure which it was felt might have had an effect on the results. In the first place, the technique of blind scoring was not employed. The scoring was done directly from the book and it was therefore probable that the scorer knew the date of the book. The effect of this knowledge cannot be assessed. A second methodological flaw lies in the sampling procedure. Systematic samples were taken from each book and the books were chosen as representative and in wide use. However, since each score was based on 75 pages of text, some books were more heavily weighted than others and the individual values of their authors might have unduly influenced the results.

In order to correct these methodological flaws it was decided to repeat the study with a drastically smaller sample. A sample of 6 pages was chosen at random from each book. The sampling of books followed the same criteria as those used in the first sample. Four books were selected from each period except the periods 1800–1819 and 1820–1839 where only two were available. The books from these two periods were double sampled. Scores on each variable were assigned to each book giving four scores for each of the eight periods thus resolving the ambiguities of sampling in the first study.

The sample had to be drastically cut since the pages were typed and coded for blind scoring. (A total of 192 pages were scored independently by two scorers in the replication whereas 2,375 pages were scored in the first study.) The same number of typed lines were taken starting with each page which had been drawn randomly.

Whenever available different books were selected for the second sample. It was anticipated that since this was a much smaller sample than the first the results would not be as statistically significant. It was felt that general trends in the same direction would validate the statistically significant findings of the first sample. Actually, plots of the results of the two studies are almost identical and statistical significance was reached in most instances in the second study, although, as anticipated, the probability levels were not as great as in the first. This comparison of the two replications gives greater confidence in the results of the first study. The data presented here come from the first study. Statistical analyses will be presented for both studies.

Results

Table 1 presents the mean imagery scores for achievement, affiliation, and

moral teaching in each of the 20-year periods. Figures 1 and 2 are graphic presentations of these data.

Hypothesis I predicted a consistent decrease in achievement imagery. The data (see Table 1 and Figure 1) show a sharp decline since 1890, but a steady increase from 1800 to the peak at about 1890. The second sample showed almost an identical curve with consistent increase up to about 1890 and then a sharp decline. The data of both samples show a significant relationship between amount of imagery and date (First sample, $F = 8.09$, $df = 7/87$, $p < .0005$; Second sample, $F = 2.62$, $df = 7/24$, $p < .05$).

TABLE 1
Mean Scores for Achievement Imagery, Affiliation Imagery, and Moral Teaching in the First Sample of Readers

20-YEAR MIDPOINT		ACHIEVEMENT IMAGERY		AFFILIATION IMAGERY[b]		MORAL TEACHING[b]	
	N[a]	$\bar{X}$	σ^2	$\bar{X}$	σ^2	$\bar{X}$	σ^2
1810	3	2.67	4.5	3.33	2.5	16.00	22.0
1830	4	2.50	1.7	4.25	11.7	16.75	9.7
1850	12	4.42	13.4	6.00	24.4	12.42	11.2
1870	3	8.33	2.5	6.33	25.5	6.00	1.0
1890	16	11.06	13.5	5.13	4.7	4.19	4.9
1910	10	9.40	5.1	6.70	12.0	4.50	2.7
1930	15	6.33	19.6	9.33	6.1	1.00	0.7
1950	32	4.25	14.8	5.50	12.7	0.06	0.1

[a]Number of samples of 25 pages scored. The raw score was the number of pages (out of 25) containing imagery.
[b]Variance heterogeneous. In no case were the variances heterogeneous in the second sample.

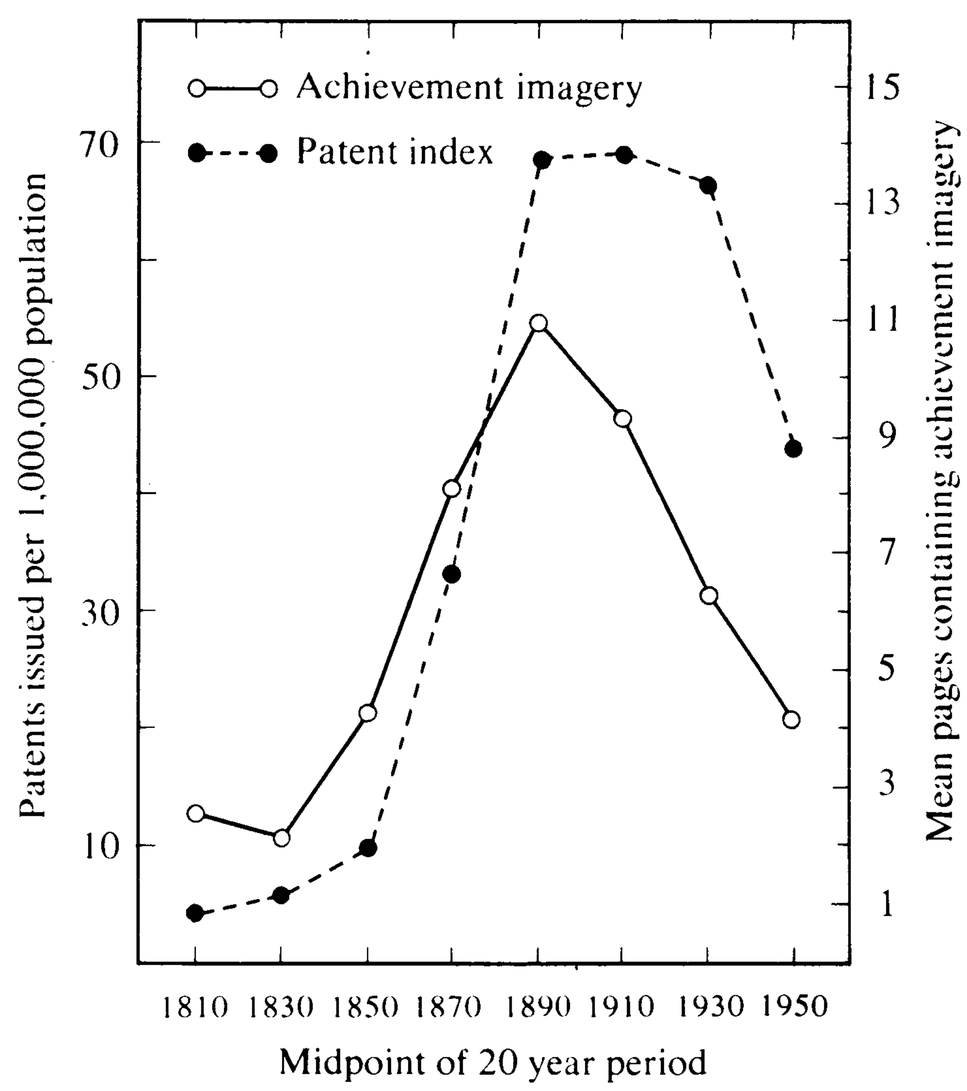

Fig. 1. Mean number of pages (out of 25) containing achievement imagery and the patent index.

Hypothesis II predicted a consistent increase in affiliation imagery from 1800 to the present. The data in Table 1 and Figure 2 show no consistent increase but do show a general trend with an unexpected drop in 1950 to the 1890 level. Analysis of variance shows a significant relationship ($F = 2.41$, $df = 7/87$, $p < .05$) but the variance was heterogeneous. The Kruskal-Wallis (see Siegal, 1956) analysis of variance of ranks also shows a significant relationship ($p < .01$). In addition, a rank correlation (Kendall's tau) between affiliation imagery and date equals $+ .61$ ($p < .03$).

The data from the second sample show the same general trend with greater variability. The correlation drops below significance and analysis of variance does not reach significance.

Hypothesis III predicts a decrease in moral teaching from 1800 to the present. The data show a striking confirmation (First sample, $F = 101.9$, $df = 7/87$, $p < .0005$, heterogeneous variance; Second sample, $F = 6.95$, $df = 7/24$, $p < .0005$, variance homogeneous).

Hypothesis IV predicts a relationship between the amount of achievement imagery during a specific period and the index of patents issued per population. Figure 1 shows this relationship in graphic form. A striking relationship is apparent. The rank correlation (tau) here is $+ .79$ ($p < .003$). The correlation in the second sample is $+ .68$ ($p < .02$).

Discussion

Achievement Imagery and Patent Index

The data on achievement imagery do not confirm the original hypothesis which was obviously too simple. There are clear indications in both samples that achievement imagery increases to a peak around the turn of the present century and has steadily declined since then. This relationship is supported by the strikingly similar data from the patent index. The number of patents granted was used in preference to the number of applications for patents for two reasons: no record

was kept of patents applied for until 1840 (this would have cut 39 years from the patent/population measure) and the very fact that a patent is issued is indicative of the "uniqueness" of the patent. Unique accomplishment is one of the criteria for scoring achievement imagery (Atkinson, 1958).

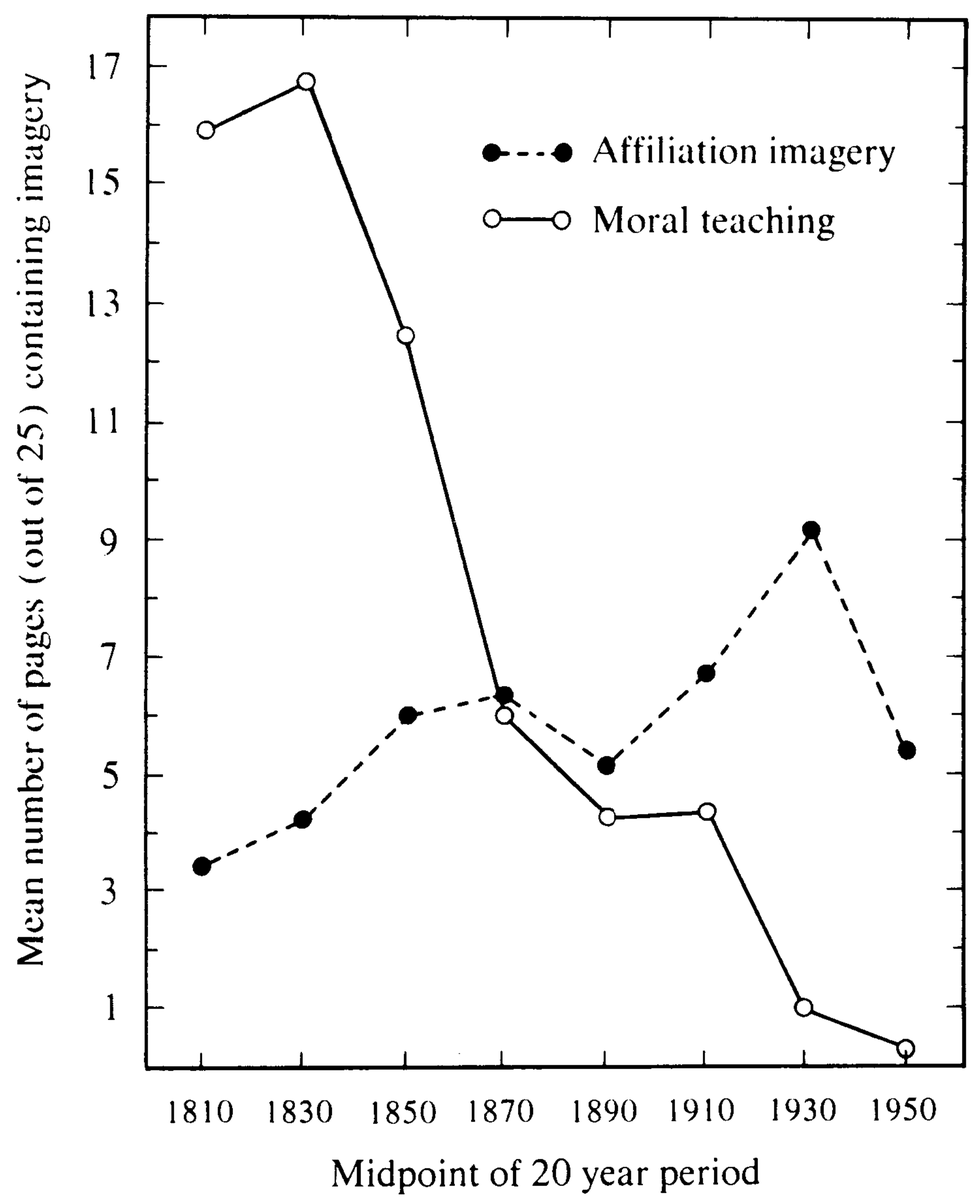

Fig. 2. Mean number of pages (out of 25) containing affiliation imagery and moral teaching imagery.

Affiliation Imagery

The data from both samples tend to confirm the hypothesis of increasing affiliation imagery, although the results were not statistically significant in the second sample. Certain aspects of the difference in type of affiliation imagery through time are noteworthy. Much of the early and middle nineteenth century readers' affiliation imagery, though widely scattered, was quite unsophisticated as shown by the following (Parker & Watson, 1857) example:

> I love my dear little brother and I am pleased when I see him happy. I did not intend to disobey you, dear father, and I hope you will not be displeased with me for what I have done (p. 75).

The discussion of the joys of giving to others continued unabated for the next page and a half. In contrast, affiliation imagery in the period from 1920 was considerably more subtle.

It was more difficult to score affiliation imagery in the earliest books in the study and it was in this period that interrater reliability was lowest. The difficulty lay in differentiating true affective affiliation imagery from a culturally sanctioned form of address. Thus "dear son," "dear father," and "my dear" were not scored unless affect was also demonstrated since this was often more conventionally approved formalism.

It is possible that this scoring difficulty could account for the results found. This, in combination with the fact that the results were not significant in the second sample, suggests caution in interpretation of these results.

Moral Imagery

The decline in the religious-moral emphasis in textbooks has long been noted by various researchers. Hart (1933), in analyzing selected popular magazines of the period from 1900 to 1930, found evidence of a general decline in the status of religion and religious sanctions. These findings are in general accord with the results of the present study. In the case of the school readers it may be argued that the diminishing frequency of moral references is a result of the secularization of the schools during the nineteenth century.

It should be noted that the first schools in the colonies were church-sponsored and, in many instances, the minister of the church also served as teacher to the children. His primary purpose was not general education but simply to teach the pupils to read the Bible. The shift from church-sponsored to the public-sponsored and supported schools began about the time of the American Revolution and continued through most of the nineteenth century. However, since all the books in the present study were prepared for public schools, the decrease in moral teaching imagery indicates the cultural trend toward secularization which

affected the management of the schools and was reflected in the books written for the schools even after they had become nominally secular.

The antecedent conditions of changes in values such as demonstrated here are very complex. As noted earlier theorists such as Riesman et al. (1950) stress the importance of psychological factors (character type) which lead to the examination of child rearing practices. Economic historians stress political and economic factors (Rostow, 1960). The historical evidence is probably easier to marshal to support the economic interpretation.

The findings of the present study fit very well the conceptual paradigm of Rostow (1960) who stresses the economic factors. He has developed a general model of the stages of economic growth which distinguishes (*a*) precondition for take-off, (*b*) the take-off, (*c*) the drive to maturity, and (*d*) the age of high mass consumption.

In the United States, Rostow (1960) found that the traditional or agricultural society lasted until about 1840. The take-off occurred from 1843 to 1860. This appears to be the take-off period for achievement orientation also (see Figure 1). During the next period from 1860 to 1900, called by Rostow the drive to maturity, "some ten to twenty percent of the national income was steadily invested, permitting industrial output regularly to outstrip the increase in population" (p. 9). The United States, according to Rostow's data and reasoning, reached technological maturity around 1900. This date is extremely close to the high points of achievement imagery and patent measures.

Rostow's (1960) preconditions for take-off are technological developments which might set the stage for increased social mobility, a factor mentioned by Riesman et al. (1950) as affecting child rearing practices. Rostow feels that during this period the idea that economic progress is possible and necessary for such ends as national dignity becomes prevalent in the culture and men come forward who are willing to mobilize savings, take risks, and engage in entrepreneurial activity.

The latter aspects have a distinctly psychological flavor. Men who take risks and engage in entrepreneurial activity are those who have high achievement motivation (McClelland, 1958). Recently economists have noted the importance of motivation and personality structure in economic growth. Thus Hagen (1958) discusses the role of the need for achievement, for autonomy, for aggression, for dominance, for affiliation, and for dependence in the beginning of economic growth. These motivational variables interact with economic and political variables to produce cultural changes.

As noted in the introduction, evidence for the importance of psychological factors such as motives and values in cultural change and economic growth has been presented by McClelland (1955, 1958, 1961). There are, moreover, studies which have made a start in uncovering the relationship between child rearing practices and achievement and affiliation motivation. Briefly, achievement motivation appears to be associated with early parental stress on independence training and mastery, coupled with a warm acceptance of the child (Winterbottom, 1958). Affiliation motivation is related to maternal acceptance and to parental stress on interpersonal involvement of the child (Gall, 1960).

These findings appear to be in accord with Riesman's analysis of the child rearing practices which lead to the inner- and other-directed character types. The parent rearing a child in the period of transition to inner-direction must equip him with a "gyroscope" which will fit him to remain on course in a society where it is impossible to foretell, due to increasing social mobility, what role he will be called upon to play. He must be equipped to be self-reliant and independent. These are the aspects which Riesman sees in nineteenth century child rearing. The antecedents of achievement motivation seem clear.

On the other hand, with increasing

urbanization and population density which result from technological advance, the child is no longer pushed to be independent, but learns the importance of other individuals in the environment. He must be taught to win approval. Although Riesman's argument is more complicated than this, the child rearing practices which he sees in contemporary United States culture seem to be ones which might lead to affiliation motivation.

In summary we propose that motivation, or cultural orientation, be conceived of as an intervening variable standing between antecedent environmental factors associated with economic and political changes and consequent behavior resulting in cultural changes such as technological growth. Such an analysis should give increased explanatory power, since it is probable that motivation is a function of factors other than economic changes. For instance, cultural values affect child rearing practices and hence motives (McClelland, Rindlisbacher, & deCharms, 1955). Thus two cultures undergoing similar economic or political change may react quite differently due to the intervening variables of values, child rearing practices, and motives.

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Chapter eleven

OBSERVATIONS ON THE AIMS AND METHODS OF CHILD-REARING IN COMMUNAL SETTLEMENTS IN ISRAEL

ELIZABETH E. IRVINE

During the last two decades psychoanalytic thinkers in this country and elsewhere have become increasingly explicit in their emphasis on the family as the only satisfactory environment for an infant, and the basic importance of an undisturbed mother-child relationship during the first few years of life as the indispensable basis of emotional security for the infant and of his subsequent satisfactory character development. This emphasis has led them to stress the dangers of any separation of mother and child during these years, and to mistrust even such partial delegations of maternal functions as those involved in the use of day nurseries for children under three. During the same period we have become aware of the existence in Israel of a growing number of communities in which the family pattern is considerably modified, and where in particular children are brought up from birth not in the family but in groups, and not by their parents but by professionals. Such a way of life at first sight appears to raise the question whether the institution of the family is in fact inherent in the basic needs of human nature, or whether it is the way of meeting these needs appropriate to the communities of which we have most experience, while other types of community might find it expedient and satisfactory to meet them in other ways. Closer acquaintance shows, however, that the communal settlements have by no means abolished the role of parent, which retains considerable importance, though the parental functions are greatly modified by the total social structure. The questions raised are therefore much more limited in scope; but it is not without interest to study how this particular redistribution of functions relating to the care and training of children, and the reduction and concentration of the child's daily contact with his mother from the earliest weeks, will affect the relationship with his parents and his social and emotional development.

A year spent in Israel, partly as a visitor and partly as a member of the staff of the Lasker Mental Hygiene and Child Guidance Centre of Hadassah, afforded me an opportunity of seeing something of this different way of life. I was handicapped by ignorance of Hebrew, and by restricted opportunities for direct observation of children, so that most of my material was derived from discussions with such members of settlements as could speak English or French, and were sufficiently interested to discuss educational theory and practice with me. On the other hand, a number of these informants were deeply interested, both as parents and as child care workers, and they were extremely generous both with their time and with information.[1]

The Nature of a Communal Settlement

The Hebrew term for a communal settlement is kibbutz (plural **kibbutzim**). A kibbutz is one of a number of types of agricultural settlement, and is distinguished from other types chiefly by two outstanding characteristics:

[1]I was able also to discuss my impressions with the staff of the Lasker Centre, several of whom had personal experience of living in communal settlements, and I participated in some group discussions to which Dr. Eisenstadt of the Department of Sociology of the Hebrew University of Jerusalem made very helpful contributions from his professional standpoint. Dr. Gerald Caplan also contributed some illuminating observations based on his own professional experience, and gave invaluable help in respect of the form and organization of the material. Any errors, however, are my own.

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a) the complete absence of money in the internal economy of the community, which supplies all members with the components of whatever standard of living it can afford, and demands from them eight or nine hours of work daily at allotted tasks.

b) the fact that the family is not the unit of living. That is to say, the parents live together, sharing a bed-sitting-room but eating in a communal dining-hall, while each child belongs to a group of children of his own age, with whom he eats, sleeps, learns, and plays.

The kibbutz way of life has been described elsewhere and I shall not attempt a general description here. The distinctive values of these communities include devotion to laying the agricultural foundations of the Jewish National Home in Israel; the creation and maintenance in each kibbutz of a classless society, with equality of manual and intellectual workers, and of men and women; the creation and maintenance of an educated peasantry; the high estimation of manual work; and the subordination of the individual to the community.

Types of Kibbutz

Kibbutzim are organized in several major groups, within each of which a common policy is worked out. Of these I got to know something of the two largest groups only, namely, Kibbutz Artzi, commonly known by the name of the movement to which it belongs, Hashomer Hatzair, and secondly Kibbutz Hameuchad. My description of the latter is unfortunately already out of date, owing to political upheavals which have occurred in the interval since I gathered my material, but I feel it is still worth recording for the sake of certain contrasts which I found illuminating. What follows is therefore as written during 1950.

Kibbutz Artzi and Kibbutz Hameuchad have so much in common that matters of educational policy are decided jointly in considerable detail, and except where specifically indicated in the text, all statements made below may be taken to refer to both bodies. On the other hand, it must be borne in mind that individual kibbutzim may choose to depart from the general line for reasons of their own, though within each kibbutz the system adopted is pretty strictly adhered to.

Differences exist mainly in the area of general organization and outlook. Hashomer Hatzair is a movement especially dedicated to developing the art of voluntary collective living to its highest pitch. Its ideology is a blend of Zionism with left-wing Socialism, and it admits to membership of its kibbutzim only those who are trained in its youth groups, and who accept, both in theory and practice, the communal way of life as defined by the movement. Kibbutzim of this group are ideologically homogeneous, and are deliberately limited in size, in order to preserve a type of society in which all members are personally acquainted, and can genuinely participate in group decisions and collective responsibility. Economic and political pressures are, however, causing gradual expansion, so that whereas membership was originally limited to 120, the line is at present drawn at about 400. This figure does not, however, include members' dependents and candidates for membership serving a probationary period, or youth groups from outside in training for eventual independence; so that a kibbutz of 400 members would probably number some 1,000 to 1,100 souls. Kibbutz Hameuchad, on the other hand, demands less ideological homogeneity,[2] mingling in one kibbutz members of different political parties; the mildly religious with the irreligious; and allows its kibbutzim to expand in membership almost indefinitely.

Partial Segregation of Children in the Kibbutz—Theoretical and Emotional Background

Children in a kibbutz do not live in a family group, but eat, sleep and spend

[2]Disruptive tensions which could be detected during my visit have now brought about the breakdown of this toleration, and a political split has occurred.

most of the day in special "Children's Houses" in groups of one age-level,[3] certain hours in the afternoon being devoted to family life. Reasons of economic convenience are given for this arrangement, as well as others on the ideological plane, but at least in Hashomer Hatzair, which might be called the "purer" type of kibbutz, ideological reasons appear to predominate. The primary object of the system from this point of view is the training of the young for collective living, not only by early conditioning to this form of life, but also by fostering in them a primary loyalty to the community, a deep-rooted assumption that the community is more important than either the individual or the family, and that in fact the individual and the family derive their value from their harmonious relation to the community, and from the contribution they make to it. The means chosen to further this end are that the basic nurture of the children should be in the hands of professionals as representatives of the community, the blood-relatives being love-objects and leisure-time companions rather than sources of authority.

The choice of these means was also supported by a tendency, which the early settlers shared with the European intelligentsia of their generation, to distrust instinct and to undervalue the parent-child relationship, while exalting the importance of professional training in child care. Beneath this attitude one senses certain less conscious components. The early settlers migrated to Israel at a time when both Zionism and Socialism involved a considerable degree of revolt against the older generation. Many of them had parents who were opposed to any secular return to the Promised Land, holding it wrong to anticipate the day when the Messiah would arise to set up the Kingdom of God. Many had bourgeois parents who were bitterly opposed to Socialism, and the setting up of these Socialist communities "free from the shame of exploitation" represents a repudiation and tacit condemnation of the parental way of life. Such an ideology tends to appeal most strongly to those individuals who have strong personal motives for revolt. The family life from which these settlers broke away was often family life at its most stifling and intense, since social conditions offered so few channels for diffusion and sublimation of instinctive forces. Since that time, a Zionist older generation has grown up, and, for many of the more recent settlers, joining the Movement represents no conflict with the parents; but I think it fair to say that the pattern of the kibbutz was laid down by a rebellious generation, and is being modified by a generation in greater harmony with its parents.

It is apt to be difficult for the rebellious child confidently to assume the responsibilities of parenthood, since this involves identification with the rejected parents; so the delegation of parental function is a natural and welcome solution of a dilemma. By vesting authority in professionals, parents are relieved of the necessity of asserting it themselves, and of the fear that by doing so they would alienate the children as their parents alienated them. All this system of beliefs and attitudes is still relatively intact in Hashomer Hatzair. The characteristic danger of the system is that individual parents will be tempted to identify with the child against the parent-figures they have themselves collectively appointed for him; but public opinion in Hashomer Hatzair is strongly mobilized in support of the system and its professional representatives, to a point which often involves misunderstanding and hardship for the deviant individual, while adequately serving the social function of preserving the structure of the society. It would be interesting to study how far these attitudes are modified in the younger generation of settlers, children of Zionist parents who have accepted with pride and pleasure their decision to contribute to the upbuilding of Israel in this dedicated and much admired way.

[3]This is a description of the original type of the kibbutz, but there are now exceptions on both points. There is a small but growing number of kibbutzim in which children over 6 live with their parents; another where children under 6 sleep with their parents; and there is now a tendency to replace the homogeneous age group by a mixed age group in the kindergarten years.

It has seemed to me that there is in some of the newer kibbutzim—even those of Hashomer Hatzair—less rigidity and more tolerance of individual variety and personal problems than in the older ones; but this would need a good deal of verification. The situation in Kibbutz Hameuchad affords an interesting contrast. This movement from the start demanded less ideological uniformity than Hashomer Hatzair; it has been less concerned to foster a high degree of community-feeling by restriction of size; and has therefore attracted a less single-minded and perhaps a less intellectual and rebellious type of recruit. In these kibbutzim one observes a marked trend towards the recognition of the value of the instinctive and emotional ties within the family, and a continual modification of the system in favour of these. This shift of attitudes and practice will be considered in more detail later.

The social provision for the child, which assumes many of the functions of family life, is very generously conceived, and a much higher standard of living is provided for the children than for the parents. These communities invest a far higher proportion of their resources in the younger generation than is devoted to the care and education of workers' children elsewhere—especially to the children of agricultural workers. Adults in kibbutzim have one bed-sitting-room for a couple, very primitive sanitary arrangements, and communal feeding arrangements which would often not compare favourably in respect of cooking and service with those of a British Restaurant. Yet their children are educated in groups of fifteen, thus receiving individual attention and help such as only exceptionally gifted teachers can approach in the much larger classes of State schools in England. The very generous character of this provision should be borne in mind throughout the following discussion.

Home and School in the Kibbutz

In the "Children's House" the babies are reared in groups of five or six, which are later merged at the age of 3 years into larger groups numbering 12 to 18. At 6 years they begin schooling, of an informal, "progressive" character. Kindergarten children spend the day in and around their "Children's House," and in the newer type of kibbutz this applies also to school children; the schoolroom, which is also the playroom, is in, or adjacent to, the "Children's House" so that the teacher and his (or her) activities are an integral part of the group and its home life. In the older kibbutzim, the children over 6 leave "home" each day for a separate school. The transition from kindergarten to school becomes something of a plunge, though mitigated by the fact that the whole group makes it together, and in some kibbutzim of this type quite elaborate ceremonial is employed in the attempt to implant in the children sentiments favourable to the new situation. The older kibbutzim are now modernizing their buildings in accordance with the current trend to bring the school into closer relation with the "Children's House" as part of a "Children's Village" within the kibbutz.

The significance of these two types of arrangement is worth some thought. At first sight there appears to be an advantage in the inclusion of the schoolroom within the home, so that the school programme benefits from the child's sentiments regarding his home. But further reflection suggests that the advantage may be greater for the teacher than for the child. The child who fails in school-work cannot localize his difficulties into a dislike of school, since the school is an indistinguishable part of the home, nor can he as a rule project them comfortably on to the teacher, who is not at a convenient distance, being something between a big brother and a father. He can to some extent compensate his school failure if he is able to succeed in music, handicrafts, or dancing, but it is more difficult for him to split it off from the rest of his life than it is for a child for whom home and school are separate entities; it therefore tends to have a more pervasive effect in undermining his self-respect and group status. The kibbutzim are reluctant to recognize a

ents should be free at this time; I heard of a father in Kibbutz Artzi who was transferred from an important job with unusually long hours to one with normal hours because certain behaviour difficulties in his four-year-old son were attributed to deprivation of his father's company. Although the circumstances are such that "mother's cooking" can hardly be an element in the sentiment for the mother, as it so often is in Europe, food usually plays some part in the relations between parents and child. It is not uncommon in Kibbutz Hameuchad for the parents to prepare a light meal and eat with the children at this time, though the evening meal proper is served in the Children's House. Those parents who do not provide afternoon tea, whether in Kibbutz Hameuchad or Hashomer Hatzair, usually offer sweets or fruit. One child (Hashomer Hatzair) made it clear that he welcomed my visits to his family because his mother only prepared tea in her room when she had a visitor.

Apart from the daily visit, the Sabbath is largely devoted to family activities; though the older children are free to decide how much time to spend with their parents and how much with their mates, it is usual for the family to spend most of the day together, with walks, outings, etc. The parents of babies and toddlers usually supplement these regular times together as far as possible by dropping in for a few minutes' contact as often as their work allows during the day. Birthdays are celebrated both in the parents' home and in the Children's House, where the more important celebration is held with the whole group, together with the child's parents and friends and relations. The various feasts of the calendar are similarly celebrated by the group together with all the parents. I was present when four children who shared a bedroom spontaneously decided to make a small ceremonial celebration one Sabbath evening, and invited all their parents to attend, and I heard that this became a regular tradition with them. The rare cases where parents habitually neglect to attend on such occasions indicate a serious disturbance of family relationships, and are almost invariably reflected in an emotional disturbance of the child. On one occasion when for various reasons, no parents were able to attend this little ceremony, the children's disappointment led to an outbreak of fighting and quarrelling.

Changing Balance of Group and Family

In young kibbutzim, the subordination of the family to the group is sometimes extreme. There is a story that a son of the kibbutz asked his father: "Who told you to make a boy?" and was given the answer "Your mother." He rejected this as a fable and gave his own theory: "It must have been on the daily work-sheet." In the early years of a kibbutz this may be hardly an exaggeration. The support of children is the responsibility not of the individual parents, but of the community as a whole, and when this community is in an economic phase when low consumption and high investment are of vital importance, the postponement of reproduction is a matter of group concern and decision. When, after a period of such postponement, the youthful group can at last afford to support some children on the standard of living they consider desirable, a certain number may be budgeted for, and priorities assigned by the group to those couples wishing to have children.

In established kibbutzim the situation is very different. Not only are such matters left to the decisions of individual parents, but the whole balance between group and family life gradually shifts in favour of the family. We were given an interesting description of this shift as it has been observed in a kibbutz of the Hameuchad group. It appears that in the early days of the kibbutz the child used not to visit the parents in their room as he does now, but they used to visit him in the Children's House and play with him there, so that the Children's House was the unchallenged centre of his existence. This would naturally become difficult as

families grew larger, but probably also for deep emotional reasons it became the practice to take the children instead to the parents' room. This was at first done unofficially and shamefacedly, but was eventually legitimized (and seems to be also now the universal practice in Hashomer Hatzair). A similar trend is occurring in connection with the celebration of feasts. At first such celebrations were held solely in the Children's House by children and parents, with a separate evening function for all the adults of the kibbutz. Now they are also celebrated by the family in the room, and the importance of this celebration is growing and encroaching, so that parents now tend, not without some guilt-feeling, to encourage children to hurry through the group celebration so as to come the earlier to the family room. This development is not simply a question of new members bringing new attitudes and adjustments; the trend could be exemplified in the life of a single individual. We were told of a certain father who, when his first child was young, exerted all his home-making and toy-making efforts on behalf of the Children's House, which he greatly enriched. With his second child he began to devote some of his efforts to building up a stock of private toys in his home room, and had the child visit him there quite often instead of always spending their time together in the Children's House. With the third child, the children's corner in the parents' room had become incomparably richer than the Children's House, and was the undisputed centre of the parent-child relationship, and a rival focus of interest and "home-feeling" to the Children's House.

Infant Feeding in the Kibbutz

I now propose to develop more fully the question of the contact between mother and child during the usual lactation period. We have seen that mothers suckle in company. Those who are new to kibbutz life tend to find the company, and the coming and going of other mothers (and fathers also) somewhat disturbing, and I have been told that many of those more accustomed to the system also have some dissatisfaction with it; on the other hand, I was told of instances where a mother, finding some cause for acute anxiety, was to some extent calmed and reassured by the other mothers, though doubtless at some cost to themselves and their babies. In some kibbutzim feeding-time is restricted to half-an-hour, and there is apt to be some disturbance of the feeding process owing to the mother's anxiety about the necessity to be punctual, but many kibbutzim now allow ample time. In one kibbutz of the Hameuchad group feeding-time is the only opportunity for contact between parents and baby until six months. The mothers make the most of it, and play a good deal with the babies as well as feeding them; and the fathers also wander in and out when free to do so. The parents of one group of babies very quickly develop a group feeling among themselves, with something of a family intimacy: for instance, a nursing mother asked the father of another child of the same group to take her photograph with her child at her breast, but rejected out of modesty his suggestion that she ask a more expert photographer who did not have a child in the group. There is in a considerably fuller sense the relationship which is expressed when English children call the friends of their parents "uncle" and "aunt." If on any occasion the parents cannot take the child to their room at the usual time, it is usually another adult of this group who deputizes.

The regime of babies whose mothers cannot suckle is one of the major areas of change in educational policy. At one time all feeds were given by the nurse; originally the bottle was used, but for many years now the cup and spoon have been in vogue, as throughout the country. Within the last few years it was decided that the mother should give all feeds till 4 months, and recently this period has been extended to 6 months. The mother then relinquishes one feed after another to the nurse in a gradual weaning proc-

ess, which a number of members feel should be still more protracted as soon as economic pressure permits. According to recent decisions, the mother of a young baby is fetched at night if he cries, and the bottle has once more replaced the cup and spoon.

A number of observations led one to pose the question whether the partial separation of mother and child and the limited opportunities for the exercise of maternal instinct tend to inhibit its full development. No definite answer to this question would of course be possible without systematic research; my prima-facie impression was that the maternal and frustrated on the one hand, and the inhibited on the other, both constituted pretty large groups. Within the kibbutz itself the mother's capacity for responsibility is not estimated very highly. In one kibbutz, mothers were not considered sufficiently responsible to be trusted outside the Baby House with babies under 6 months; and other instances of social mistrust of mothers were encountered elsewhere. It is not clear, however, how far these precautions were really necessary, or how far the authorities were legislating for the least responsible members of the community, as some British Hospitals ban visits to young children because a minority of parents smuggle in unsuitable food. I noticed that some mothers who had had their first experience of motherhood outside the kibbutz liked to have the baby in their rooms on their free days, while it seemed that those who had learned motherhood in the kibbutz found this rather surprising.

Most interesting from this point of view is an experience in Kibbutz Hameuchad. In a certain large kibbutz (or perhaps more than one) the builders could not keep pace with the birth-rate, so that a number of mothers had to care for their babies in their rooms for some weeks before proper accommodation was ready. Contrary to public expectation, and in spite of the lack of proper facilities in the parents' room, the mothers found the experience so satisfying, and so valuable for their contact with the baby, that they combined with the psychologists of the movement in a successful campaign for a new policy, that all babies should remain with the mother for the first six weeks. In speaking of this move to mothers in other types of kibbutz, I often encountered a negative reaction; those who had not experienced the satisfaction of having the full care of their babies seemed to find it hard to believe in it, and envisaged such care as a burden.

A number of other factors appear to threaten the development of maternal feeling. It is not only in Israel that those nurses who have the warmest contact with babies tend to harbour unconscious jealousies of the mothers, but in the kibbutz the social climate gives greater scope for an unconscious attack by the metapeleth[4] on the mothers' maternity. A baby's metapeleth, who showed an unusually high awareness of the babies as people, and had a warm relationship with them, explained with evident satisfaction how she has to teach the mothers to give the breast, that those who lose their milk are often too nervous to give the artificial feeds successfully, and that the baby will often accept food only from the metapeleth, so that often the mother is unable to feed the child even for the four months which is still the limit in that kibbutz. (This kibbutz was one of another group, the only one of its kind visited.) It would be interesting to know how often such a situation occurs; it evidently provides a discouraging start for the mother-child relationship.

There is considerable social ambivalence towards the whole question of mother-child relationships. On the one hand, the child care staff of the kibbutz now receive during training up-to-date psychological teaching, and are well aware of the child's needs for parental love. On the other hand, parental love of more than a certain intensity is a threat to the kibbutz way of life, since it tends

[4]Metapeleth (plural metaploth) is a term which includes the functions of nurse, house-mother, nursing or kindergarten teacher.

to make parents dissatisfied with the system; and frustration in this respect is a not infrequent factor in the decision to leave a kibbutz. There is therefore considerable social pressure in favour of moderation in parental love; fussy and over-protective parents, who interfere with the parent-substitutes, tend to be severely criticized, while the theoretical knowledge of the young child's need for his mother does not prevent numerous instances in which the kibbutz encourages the mother of a young child to absent herself for some period, which may be as long as two years, for a course of professional training—always provided some relative remains in the kibbutz, who is believed to "take the mother's place." The child care staff are in a dilemma; they have been taught the importance of parental love, and they are quick to recognize the disturbance of the child in response to any lack of it; on the other hand, they are the first to suffer from any excess, which makes the parents apt to be jealous and critical towards them, and to interfere between them and the children. The social demand in respect of the parents is characteristically expressed in the phrase "they should give love to the child." This concept of "giving love" seems to represent something other than "loving" in the commonly accepted sense; an attitude more detached, with less involvement, a wise benevolence guided by insight into the child's needs and willing to satisfy these without making emotional demands in return, undisturbed by possessive or protective impulses. It is, in fact, the attitude of a good educator rather than the less rational and more instinctive thing which Western psychologists would expect to find in a parent.

This attitude towards parents is not uncommon among Western educationists. We too have a body of opinion which holds that children should be reared by experts, rather than by their amateur parents; or that parents should be trained for parenthood to make them less amateurish and instinctual. Many of our educators notice how much more easily and harmoniously they manage children than their own parents appear to do, and conclude that it would be better if the attitudes of the parents approximated their own. In fact, the same forces can be seen in conflict in the kibbutz and in our own community, but the balance of forces is different, since in Western communities there is still a powerful body of opinion which holds that "a mother understands her child best," whereas opinion in the kibbutz solidly supports the professional against the parent in any difference of opinion.

Social attitudes, then, are rather more unfavourable to strong parental feeling in the kibbutz than in Western communities. One found also that in certain cases inhibition seemed to have been developed in partial self-protection against the pain of instinctual frustration. Rachel, aged 6, was examined on account of destructive behaviour, and the general picture given by the child care staff was that the mother did not give the child enough love; but the mother described with great feeling her own distress at being unable to respond when her child saw her working with another group and called to her, and having to look helplessly on while Rachel, who was the smallest in her group, was bullied by her stronger companions, with very little protection from the metapeleth in charge. It was clear that maternal feeling was not absent, but had to be subjected to severe control to enable the mother to refrain from interference; had the feeling been any stronger, or the control any less, the mother would have been forced into open conflict with the authorities, or would have found the situation so intolerable that she would have had to leave the kibbutz. The insight of the educational staff in that kibbutz and their relations with parents had improved very greatly of recent years, but the mother had acquired a degree of inhibition which now made her appear to lack warmth of feeling for her daughter. I have met other mothers who were suffering considerable tension

through impotent dissatisfaction with the care their children were receiving.

A certain damping down of maternal feeling and responsibility would seem to be an appropriate adjustment to life in the kibbutz. It is difficult to envisage how responsibilities could be equally shared between mother and metapeleth without a great deal of conflict, so that if the nurse is not subordinate to the mother it probably makes for social harmony and avoids strain for the child if the mother is subordinate to the nurse. But there are indications of ambivalence about this adjustment, which make one feel that its stability is uncertain. Rachel's was not the only case in which one became aware of incompatible demands on the mother, or social dissatisfaction with what appeared to be a not unnatural corollary of the system. Metaploth were critical of mothers who were reluctant to miss the theatre when their babies were feverish, and who tried to leave the responsibility of decision to the metaploth. Also the demands of the system fluctuate. At normal times it demands subordination rather than responsibility, and a self-protective damping down of possessive and protective impulses; but from time to time the parents may have to take charge of the child during alterations or redecoration of the Children's House, or when he is isolated from the group owing to illness, and this demands a heightened degree of devotion and responsibility. Some informants felt that a number of parents lacked the elasticity demanded.

Factors Making for Change in Methods of Child-Rearing

We have seen how the shifting balance between family and communal nurture of children is expressed in the growth of opportunity for contact between mother and child during the first year of life, and the acquisition of full primacy in the feeding function by the mother, whether she has milk or not. Psychology has made a direct contribution to these changes, through the influence of certain psychologists and psychoanalysts, some of whom work within the system, while others are called in from time to time to advise on individual or group problems. It has also made an indirect contribution through the influence it has had on the general outlook of certain young American groups of settlers, and the professional training of some of their members. One such group included several young women with up-to-date training in child care, emphasizing the vital importance of the mother-child relationship, and of giving free play to the instinctive interaction of the nursing couple, including the spontaneous rhythm of instinctive drive and satisfaction. This group was placed for training in an older kibbutz with inflexible methods of child care, strictly limited feeding-times, early and rigid toilet-training; young mothers with modern training experienced great difficulty in submitting their babies to this type of care, and were unable to refrain from open protest and conflict. When the younger group was ready to establish its own kibbutz, it modified the traditional pattern very considerably according to its own beliefs on these questions. The group instituted self-demand feeding for babies, special huts for nursing mothers being provided near the Baby House; ample time was allowed for feeds, and self-demand also made privacy of feeding easier to obtain, since it automatically staggered feeding-times. A special night-watchman (or woman) was provided for the younger children, instead of reliance on an occasional look-in by the regular night-watchman of the kibbutz, who has a big round and many other preoccupations. The system of toilet-training was also greatly liberalized.

There are many indications that frustrated maternal feeling has been a prominent factor in the process of changes in the movement as a whole. I was told, for instance, that the policy of allowing milkless mothers to feed their babies on the same footing as those who could suckle was introduced to obviate depression in the mothers, rather than because of any feeling that it would benefit the children. The desire of parents was

also given as the reason for the change in certain atypical kibbutzim, where arrangements are made for children over 6 to live with their parents. This trend appears to be spreading, though it has aroused very strong resistance in the more orthodox kibbutzim. Unfortunately I was not able to visit any kibbutzim of this type, so I could not hear their own reasons for the change, but only those attributed to them from outside. We have seen that the change in Kibbutz Hameuchad concerning the first six to eight weeks of life, arose mainly from the experience of mothers, though with some psychological support. This involves many of the innovations introduced by the American group mentioned above. It permits of self-demand feeding during the baby's period with the mother. At the end of this period, most babies are said to have settled into the usual four-hourly rhythm, but where this is not so, the mother is fetched when the baby appears to be hungry. If the child is persistently fretful, the mother's maternity leave may be extended to allow her to continue full care of the child. It is felt by those kibbutzim which have adopted this system that babies settle better under it. Here we have a change arising not from theory but from living experience, which is flexibly applied, with acceptance of individual differences; whereas changes arising from theory have been apt to be suddenly made and rigidly applied. Most important perhaps is that it appears to have been brought about largely by an increase of maternal feeling accidentally stimulated by extraneous circumstances which threw the mothers and babies more closely together during the first weeks of life. Having grown by what it feeds on, the appetite has now demanded safeguards for its satisfaction, and recognition of its objective value. Conditions have thus been created for a permanent rise in the general level of maternal feeling, and one has the impression that this will create an unstable equilibrium, since the maternal instinct, established at this higher level in the first six weeks, is likely to increase the frustration of mothers in relation to the conditions of nurture prevailing after that period, and the tensions between them and the metaploth. The potential for change in the direction of extending parental responsibility for nurture therefore seems to be considerably increased by this innovation, which appears likely to have a snowball effect.

One suspects that this aspect of the question is not far from consciousness among the members of other kibbutzim. The very vigorous opposition the idea arouses in many circles of Hashomer Hatzair suggests that the political and administrative leaders of this movement have a shrewd idea of the far-reaching implications of such a change.

Quality of Child Care in the Nursery Years

The arrangements for children under kindergarten age suggest that, as in wartime Britain, the needs of this age-group tend to be envisaged predominantly in terms of physical care, while emotional needs are apt to be somewhat dimly apprehended. There are, however, indications that training courses have recently improved considerably in this respect. On the other hand, not all child care staff are trained. Kibbutz communities certainly desire that they should all be fully trained, but this ideal cannot be realized at present, owing to shortage of training facilities in relation to expanding demand, and the economic difficulty of withdrawing members from production and service to undergo training at the expense of the kibbutz. In these circumstances, baby nurses and kindergarten teachers have priority in training over metaploth for children between one and three years. I had the impression also that some of the training had been directed to teaching whatever method was in vogue at the time, rather than towards developing insight into the basic needs of children, and that an over-intellectual approach had sometimes resulted in a certain rigidity of attitude.

Young babies sleep out of doors by

day in cots called "luls" (chicken runs) which have to be walled with wire mesh to keep out the flies from the farm, or any marshy land in the neighbourhood. When they begin to crawl, they are put in a somewhat larger twin "lul" for company, and it is particularly during the second year that the failure to appreciate the child's needs for freedom of movement and varied play material is most striking (of course with certain exceptions where nurses happen to have unusual insight). The two-year-olds have space to walk in a fenced-in playground, but still tend to suffer from lack of play material, or from toys which have gone stale from long familiarity. Young children in these conditions appear apathetic compared with children in more stimulating environments, or else they seem to cry unusually often, but stop if even a strange adult pauses to smile or talk to them. If the nurses are around they usually respond, but they are pretty busy with domestic duties, and are often out of earshot, or simply unresponsive, when the children cry in the kind of minor predicament which would bring a good mother from her housework and could be straightened out in a few minutes by her attention.

The listlessness or apathy of the children seemed to be related to a lack of security and stimulation which in other settings is derived at this age from the company of adults and older children. One hears of instances in which, in the absence of supervision, children of this age hurt each other quite badly with sticks; and of course many kinds of nursery apparatus could be used in this way, which probably accounts for the absence in many kibbutzim of much material which one would expect children of this age to have. (Another factor is that unsupervised children are apt to lose or spoil apparatus.) On the other hand I saw in one kibbutz a group of children for whom a fine large model bus had been constructed, big enough to hold the whole group. It was raised above the ground to a height which made it rather difficult for the children to climb into, and while I watched more than one child climbed half-way up and got stuck till I rescued him. There were boxes available not far off with which a step could have been made in no time. Experiences such as this would tend to induce caution or reluctance to use the larger toys. Nearby another group was well equipped with a swing, see-saw and climbing frame, but made little use of them until an older boy came to visit his little brother; in fact, to use this apparatus without supervision would not have been without danger, whether from the children's own lack of skill and judgment, or the aggression of other members of the group. I was interested in the effect of my own presence outside the fence. The children seemed bored and listless until they noticed me watching, when they gathered round and rapidly improvised games of giving and taking with me, or of asking me to name their toys. The lack of stimulation has been recognized in Kibbutz Hameuchad, and an attempt made to deal with it by introduction of kindergarten groups of mixed ages, but a child does not enter a mixed group till two and a half. It is reported that these groups are proving more satisfactory, and that fewer quarrels arise in them. Some people were met with in kibbutzim who also felt more adult supervision for young children to be desirable, but said that the lack of this was partly due to economic causes and partly to a feeling that it is undemocratic for a trained children's worker not to take a full share of the domestic work of the Children's House, which leaves her very little time for actual work with the children. There also seems to be some difficulty about the trained people imparting what they have learned to the untrained.

Caution is required in evaluating such phenomena. One's first reaction is to suppose that whatever the success of the kibbutz may be in producing stable personalities, this has been achieved in spite of certain remediable technical defects and could theoretically be increased if these were corrected. But further reflection on the intricate balance of social and emotional forces surrounding these children suggests there may be other implica-

tions of the facts described. It seems likely that the rather unstimulating and frustrating environment of the child under three, and the limited physical and emotional contact which he often has with his metapeleth, has enhanced for him the intensity of his relations with his parents and the significance of the family room, and has thus contributed to the general tendencies already described. Tension between mothers and metaploth is not uncommon, and the more evenly the child's affection is divided, the greater the degree of potential conflict in him. I occasionally met the ideal metapeleth, who can be warm and responsive with the children and fill their daily life with satisfying experiences, while remaining unpossessive and free from rivalry with the mothers; and in these cases one could infer the character of the metapeleth from the busy, constructive, and harmonious activity of the group. But this is a tall order, and the choice must often be a metapeleth who soft-pedals her role by concentrating on the physical care of the child, thus leaving him somewhat frustrated during the bulk of the day, but free to revel wholeheartedly in his few hours with his parents in the evening; and on the other hand a more maternal metapeleth, not without possessiveness and rivalry with the mother, who gives him a more satisfying day, but at the cost of a conflict of loyalties. A study of metaploth from this point of view and their effect on different children should be of great interest if it were possible to carry out.

Toilet-Training in the Kibbutz

Toilet-training is an area of some difficulty in kibbutz education. It is carried out by the nurses, not the mothers, apparently with the result, observed in institutions elsewhere, of prolonging the period of struggle. I obtained figures of the incidence of bed-wetting among children of 6 to 7 in several kibbutzim. In one kibbutz which had 47 children in this age-range, 15 were reported as bed-wetters; 8 from a group of 15 children in another kibbutz wet the bed, 4 regularly; in another group of 15, 5 wet the bed, 2 regularly. The lowest proportion of regular bed-wetters was therefore 1:7½, whereas Miss Netta Glass[5] found only 6 percent regular bed-wetters among 74 children aged 3–6 belonging to English families, half of whom attended day nurseries. I heard, however, of an exceptional kindergarten teacher who had made an extensive reputation by passing on three consecutive groups of six-year-old children (i.e., 36–45 children in all) without one bed-wetter, but I was unfortunately unable to meet her or learn anything of her approach and methods, or of general conditions in that kibbutz.

The above figures are not strictly comparable with those of Miss Glass, since some of the children in her group were probably raised at night. Kibbutz children are not usually raised, and little attempt is usually made to discourage bed-wetting.

One kibbutz visited had previously favoured strict early toilet-training, but the members had become concerned over a number of cases of stammering and bed-wetting arising among children of school-age in response to changes of metapeleth. They sought psychological advice, and told me that they had been advised that such reactions could perhaps be prevented by postponing toilet-training till 18 months, and then carrying it out with great patience and flexibility. They tried this out, and are now well satisfied that the results of this method are more stable, and that children trained in the earlier way tend to be over-sensitive. A case was related of a girl of two who was not yet toilet-trained but spoke well. Following a change of nurse, with stricter toilet-training, she became clean, but began to stutter. On psychological advice, the nurse discontinued training and was in no hurry to change her soiled clothes. The child's speech improved as she returned to soiling, and for nine months periods of soiling and stuttering alter-

[5]Glass, Netta, "Eating, Sleeping and Elimination Habits in Children Attending Day Nurseries and Children Cared for at Home by Mothers," *Am. J. of Orthopsychiatry*, Vol. 19, No. 4, Oct. 1949.

nated, till the symptoms eventually faded away. Cases such as this had obviously made a real impression on public opinion in this kibbutz. In another, psychological advice had been less effective. I was consulted about bed-wetting in the two- to three-year age group, and was told in answer to enquiry that an analyst had already been consulted and had said that it is forbidden to make a problem of bed-wetting; this appeared to have left the members dissatisfied and unconvinced. A psychologist was working actively for the liberalizing of the system of toilet-training in this kibbutz, and the reduction of the ceremonial atmosphere surrounding it, but there was said to be strong resistance among the metaploth. At one time, I learned, toilet-training began at 6 months, and as the staff was too busy to hold the babies out, those who were too young to sit were tied in position on the stool. Training has now been postponed till one year, but the children are left for half-an-hour on the pot five times a day, perched in a row on a bench to prevent them from getting off. One informant in this kibbutz mentioned an impression that children with emotional problems were apt to demand the pot immediately they arrived in the parents' room in the afternoon, and that many parents resented this, and complained that the children should have done their dirty business in the Children's House. One mother in this kibbutz discussed with me a two-year-old child who had recently become wet when her twin sister had stayed in the parents' room during illness; subsequently she tried raising this child once at night, and found that the dry twin also demanded to be raised, and that both wanted every morning to know that they had been raised the previous night, obviously interpreting the raising as a mark of maternal affection.

Parents and Parent-Figures in the Kibbutz

Popular discussions of infancy in kibbutzim tend to focus on the amount of time a mother spends with her children, and the relative advantages and disadvantages of a whole day spent together, while the mother combines the performance of her household duties with attention to all the varied needs and demands of a young child and keeping him out of mischief, as against the undisturbed hour or two in the kibbutz during which she can give her undivided attention to petting and amusing her children. There are, however, more fundamental differences between the situation of the young child in a kibbutz and outside. Children outside belong to a family, and may spend certain hours of the day in Nursery, Nursery School, or School, which may achieve a certain emotional value for them, according mainly to the acceptability of the nurse or teacher as a parent-substitute. Children in the kibbutz belong to a family *and* to a group, each including its appropriate adults; and a child of one year removed from the kibbutz to live with its own loving and united family has been known to manifest considerable disturbance at the loss of its other focus of feeling, the group-with-metapeleth. Mother, father, and metapeleth have a different pattern of roles from mother, father, and "parent-substitute" outside. In pure family life (uncomplicated by the mother working outside the home) the young child is aware of two adults of first importance, the mother constantly present, the father intermittently so. Both combine a loving, security-providing relationship with the exercise of authority; this element, as the child grows older, becoming more prominent in respect of the father, as the head of the family. In the kibbutz the metapeleth is the constant figure day by day, both parents being intermittent; it is she who cares for the child's needs (apart from feeding till weaning) and she who comes or is there to run to when he is hurt or frightened. She is the repository of authority, who is responsible for toilet-training, control of aggression, and so on. She is not in fact properly conceived as a parent-substitute, but rather as an auxiliary parent, whose functions in respect of authority and training are primary, not

derived. In the long run, however, this auxiliary parent is only temporary. The parents will remain constant, while the metapeleth will probably change at one year and at 3 years, when a kindergarten teacher will take over, to be replaced from time to time by other teachers as the educational needs of the group are felt to demand.

Language reflects the distinction between the group sphere and the individual-family sphere. "Whereas a child will say 'our nurse,' 'our teacher,' he will say 'my father,' 'my mother.' So too with the parents; they will say 'our children' when they talk of the children of the whole kibbutz, but 'my child' when speaking of their own."[6] The parents are free to be as affectionate and indulgent as only grandparents can be in cultures where parents have to check these tendencies to some extent in the interests of social training. One would expect it to be of deep significance that the mother is not the source of frustration and compulsion at the excretal level (though I have mentioned some indications that her lack of interest in these functions may have an ambiguous meaning for the child). The status and attitude of mother and father are indistinguishable, the father being in no sense the head of the family, and the attitude of fathers to their children often calls up the adjective "maternal" to the mind of an observer. In spite of this, and of the scrupulous equality of the sexes, the father seems to remain a hero-figure to the child. Children compete in boasting of the importance of their fathers' jobs, and are much concerned with their fathers' prowess in warfare or in the defence of the kibbutz against Arab marauders. It seems likely that the general playing down of parental authority may lead to a reduction of ambivalent tensions as between parents and children, though much must depend on whether the child blames the parents or the metaploth for the frustration which is evidently felt about the limited contact with the parents.

[6]David Reifen, "Children in Communal Settlements in Israel," *New Era,* Nov. 1949.

Relations of Children and Auxiliary Parents

One would expect to find considerable ambivalence focused on the metapeleth or teacher, who on the one hand supplies the child's material needs, and gives a certain amount of emotional response and security, while on the other hand is the source of authority and control, and appears to stand between the child and his parents. I saw a number of instances of a very warm and deep relationship between metaploth and children, and it is not unusual for children to call a metapeleth or woman teacher "mother" by a slip of the tongue. One metapeleth, who had been with her group throughout their first seven years, said the children often refused to miss group activities with her for an outing with their parents, and I saw a child crying at having missed a lesson owing to medical treatment. In discussing the value of continuity, this teacher expressed the view that it was inadvisable to remain so long with one group. She was at the time preparing to part with this group, and it was evident that this would be a most painful experience both for her and for the children. I have already mentioned that changes of metapeleth appear to be a frequent cause of such symptoms as stammering and bed-wetting. At the other extreme one finds some groups of younger children who show marked reluctance to return to the Children's House after visiting their parents. However, the problem of poor relationships between certain metaploth and their groups is less complicated than that of the good relationships which cause so much pain when inevitably they have to be given up. A first reaction was that continuity of auxiliary parent was the ideal, but was difficult to achieve on account of the demand for specialized technical training for work with different age-groups; but reflection raises the question whether the permanence in the auxiliary parents is desirable for children who are in daily contact with their own parents. Imagining oneself in the position of metapeleth, it is possible to see the difficulty

of working out what quality of relationship is most suitable for one who fulfills so many of the maternal functions, yet has to share the children with the real parents, and will not be permanently in charge of the children.

The Child and the Group

The child may or may not have siblings, but he is born into a group as irrevocably as he is born into his family, and this group is bound to be one of the basic factors in his life. The relationship between child and group is intense and ambivalent. To begin with the negative aspects: the young child spends his days in a group of six as nearly as possible of the same age as himself, so that their needs are competitive rather than complementary. They compete, as has been shown, for the very limited time and attention of a busy metapeleth. Open and sometimes violent aggression is easy to observe, and many kibbutz members are somewhat concerned about this problem. It is, however, difficult to say how far the level of aggression is higher than in any other nursery group, or how far it simply appears more openly because the children spend so much time unsupervised and unorganized. (I have the impression that nursery school workers spend a good deal of time and effort in averting or resolving conflicts between their charges.) On the other hand, it would not be surprising if there proved to be an unusually high level of aggression among children of this age who are given freedom rather than emotional security, since one might expect a vicious circle of insecurity and frustration producing aggression, which then produces in the victims a secondary cycle of insecurity, anxiety, and aggression.

However, the positive aspects of the group are also quite evident, and friendships formed in these early years are often close and durable. The child's identification with the group is also very strong. One kibbutz of Hashomer Hatzair made an experiment at the time when three small groups of toddlers were amalgamated in one kindergarten group. Instead of each small primary group being given one bedroom, the children were shuffled and distributed between the different rooms, but without any compulsion to remain in the bed allotted. It did not take long for them to sort themselves out, with each primary group reunited in a separate bedroom. It is often difficult to disentangle group solidarity and the tie to the parent-figure as factors in a concrete situation, as in the case of the children who refused outings with the parents for fear of missing group activities. Similarly I visited one kibbutz at a time when primary groups were being broken up in order to form kindergarten groups of mixed ages, and there appeared to be a good many cases of sleep disturbance in consequence; but one could not say how far this might be due to the breaking up of groups, and how far to the incidental changes of metapeleth. The same applies to the information that when sick children are being nursed at home by their mothers they soon begin to fret to be back with the group.

Uniformity of dress is the rule. The group may enjoy considerable variety in dresses, shirts, and blouses, but all children will be issued with the same pattern on any one occasion. I was told of an attempt made in one kibbutz to introduce individual dresses for the little girls, which had been defeated by their insistence on the accustomed uniformity. On the other hand, I was told that when, on reaching adult status, each girl was invited to choose an individual wardrobe according to custom, they were very exacting and hard to satisfy. This was attributed to inexperience in choosing, but I wondered whether it might not be a reaction against the previous uniformity, and an indication of hidden ambivalence underlying this.

Deprivation and Divided Loyalties in the Child

It is difficult to estimate how far the children feel deprived at the limited contact with their parents, whether con-

sciously or unconsciously. It was not uncommon to see children of 2 or 3 crying for their mothers. Thumb-sucking and enuresis seem to be unusually prevalent and would seem to indicate a higher degree of insecurity than prevails among home-bred children; but one has to make allowance for the fact that no attempt is made to discourage either habit in most kibbutzim, and that it is not usual to raise young children even once during the night. There is therefore a possibility that the threshold of symptom production might be lowered by these factors. However, there seems to be little doubt that bed-wetting is not simply due to lack of training, but is related to conflict or insecurity, in view of the circumstances in which it occurs. One teacher mentioned that the two regular bed-wetters in his group of six-year-olds both began when younger siblings were born. In another kibbutz I heard of a group of six-year-olds who all wet their beds on the first night in a new house.

There is usually not a marked preference for either family life or the Children's House, but a need for each in due season. It is exceptional for even young children to protest over returning to the Children's House at bed-time; children in a successful group have their eye on the clock as the time approaches for visiting their parents, and again when the time approaches to return to the Children's House. Teachers and metaploth say that children are unsettled by even a few days' "spoiling" by the parents during illness, when they are moved to the parents' room, while parents say the children soon fret to return to the Children's House. All this would seem to indicate a certain degree of conflict arising from divided loyalties. The child's sense of security appears to demand stability in three different fields: parents, auxiliary parents and group. One might suppose that being thus diffused, it would be less easily upset by disturbances in any one field, but there seems to be little or no indication that this is so. All the child care workers insist that the children react very strongly to any disturbance in the family life (although one cannot be sure that they react in the same degree to the subtler disturbances of family relationships as some children seen at Child Guidance Clinics elsewhere). A kibbutz child of three or four with a father in Hospital was observed clinging to her mother and trying to dissuade her with tears from leaving the kibbutz to visit the father, in just the same way as an immigrant four-year-old, who had not yet settled into the Children's House, behaved in the same situation. A girl whose mother had long periods in Hospital during her early years rejected the mother as passionately as any child to whom family life was everything, and was still not fully reconciled in adolescence, in spite of great understanding and good personality on the part of the mother.

Jealousy and Insecurity

Acute jealousy reactions to the birth of siblings appear to be common. I have already mentioned bed-wetting in this connection. An interesting episode was observed concerning a little girl of five, who had been till recently the only child. Shortly after the birth of the baby she made a scene at bed-time while undressing, with both parents present, and was consoled when the father performed some gymnastic feats with her. He was then persuaded by another child in the group to repeat the performance with him, when his daughter renewed her tears with redoubled bitterness. The efficacy of the trick appeared to have resided in her being singled out by the father for a special privilege, which emphasized the bond between them, and the extension of the privilege to another child in the group spoiled everything.

Another cause of jealousy and insecurity is the fact of a mother working with babies. Rachel, mentioned above, was spiteful to babies long before she had a younger sister. This was apparently related to the fact that her mother was a baby-nurse, and Rachel had often seen her attending to her babies, and unable to come

to Rachel, who was in another group, even when she cried for her. She also bore for several years an extra grudge against a child in her mother's group who has required special nursing attention. It was recognized in most kibbutzim visited that it was harder for a child to have his mother work with children than to have her do other kinds of work. A clear example of this conflict was seen in a boy of 4, whose mother had trained as a teacher at some distance from the kibbutz during his second and third years, leaving her own parents to fill her place with him. When she returned, and took up work with a group (in this case older than her own son), he continually asked her, "Do you belong to me or to them?" and "Who do you belong to when you are with them?" He objected particularly to her eating with her group (as teachers do), insisting that she ought to eat with other adults in the dining-hall. This mother was not in the habit of making tea in her room, so that in fact she never ate with her son. The boy was said to be obstinate and difficult, and inclined to pilfer food.

Identifications and the Super-ego

It is difficult without a more intimate experience of kibbutz life to penetrate into the question of the child's identifications and the structure of the Super-ego. There is a certain amount of superficial evidence available. For instance, when a kibbutz is raided during the night by Arab marauders, all the children are very eager to know whose father was on guard and how he acquitted himself; and the watchman's children are proud or ashamed according to the report. My impression is that the parents are no less important than elsewhere for the Ego-ideal, while the teacher has a relatively greater importance as the representative of social morality. A teacher of six-year-old children described the process by which his values were being incorporated as an important part of group and individual standards; he often heard children rebuke each other by saying, "J ——— would not approve of that." On the other hand, the teachers deliberately share with the group the role of guardian of social morality, and frequently bring behaviour problems of the individual before a group meeting. It then often happens, as has been found elsewhere, that the group adopts a severe Super-ego attitude, producing deep guilt and shame in the culprit; on occasions the teacher feels obliged to step in as advocate, mediator, and saviour, sometimes producing almost the effect of a religious conversion. One or two informants suspected that the Super-ego is less completely internalized in kibbutz children than is considered normal in European children. This may for instance be one factor in the problem of aggression mentioned above; no one feels guilty because responsibility is shared and diffused over the whole group. There are indications that in some kibbutzim the adults approve or condone activities undertaken on behalf of the group which they would strongly condemn if engaged in by an individual on his own behalf. I am not in a position to say whether such attitudes vary according to whether the subject was brought up in a kibbutz or joined at a later stage of development; they may be related to the experience of membership and collective living rather than to early upbringing.

An interesting psychiatric observation was made during the Arab war, among a group of children evacuated from a kibbutz, and accompanied by their metaploth but not by their mothers. The incidence of symptoms among these children did not appear to be less than among evacuated children in England, in spite of the presence of their accustomed mother-substitutes. On the other hand, since the incidence at least of bed-wetting and thumb-sucking in normal conditions appears to be higher in the kibbutz than outside, some of the symptoms observed may have been chronic, and not specifically reactions to separation. However, those children whose fathers were killed in the fighting did not seem to be so pro-

foundly crushed by the loss as their counterparts in England. This observation was not of course interpreted as indicating any lack of love between children and their fathers; on the contrary, the relations between fathers and children are characteristically extremely warm, and relatively uncomplicated by considerations of discipline and authority. It rather suggests that the Oedipus conflict may be less intense in the child of the kibbutz, and because his relationship with his father is less fraught with hostility and jealousy there is less guilt in his reaction to the father's death.

Co-education and Sex Development

Children in both the major types of kibbutz live together without segregation of any kind during infancy and the latency period, sharing bedrooms in small groups and taking their showers together. Separate bedrooms and bathing facilities are arranged in Kibbutz Hameuchad when the children request it, which usually occurs between the ages of 9 and 11. In Hashomer Hatzair, on the other hand, such demands are strongly discouraged in the name of comradeship, and mixed groups continue as before until the age of 18. I understand that there is some weakening in this respect, but vigorous efforts are still being made in some kibbutzim to maintain the original system; I visited one kibbutz which had made no provision for separate bathing, though the older boys and girls were coming to blows about the girls' demand to have their showers at a separate time. One informant, himself a madrich working with youth groups, said he felt that this system, with its emphasis on comradeship, made the subsequent development of love relationships difficult, and fostered a high degree of sexual inhibition, which often extended beyond the fellow-members of the youth group, and tended to create sexual difficulties even in exogamous unions. Although early marriage is common, he felt that many of these unions are contracted partly in fulfillment of social expectation, and partly for reassurance against an underlying anxiety concerning adequacy for married life. These impressions agree with theoretical expectation, but systematic investigation would be required to establish any valid conclusions on the subject. Even if it should prove to be true that sexuality is to some extent impaired by this regime it might still be the case that this is a necessary price to pay for the high degree of social cohesion which is required for this type of pioneering task (contrast the turbulence of American pioneering communities during the opening up of the West).

For various reasons it was easier for me to gain insight into the attitudes of pre-school children than of older ones. This was a serious disadvantage, since one cannot evaluate an educational system except in terms of its final results. I was able to learn something of a group of children in the latency period which showed something of the responsibility and capacity for sympathetic identification with adults found in children at a good progressive school. At the age of 7-plus, this group had been taken on by a young and inexperienced teacher, who had presented her first lessons in the form of games, but had been urged by the children to be a proper teacher, and not to treat them like a kindergarten. During the first year the teacher had felt that outbursts of uncontrolled temper were unduly common in the group, but at the time of my visit, when the age-range of the group was from 8 to 10 years, this seemed to be less of a problem and there were various indications of group responsibility and some maturity of feeling. The children put themselves to bed apparently quite happily and reliably. I was told of one occasion when the teacher had been absent, and was greeted on her return with an enthusiastic account of the games introduced by her locum; but one of the children hastened to add, "Never mind, you'll learn to do it just as well." This group also provided examples of the fact that children whose family life is unsatisfactory can find a substitute in the home

of the teacher more readily and naturally than occurs in the type of community to which we are accustomed.

Proper evaluation of the results of the system would require very thorough and serious investigation, such as I cannot claim to have attempted. Even this descriptive sketch is difficult to draw with confidence, since a deceptive similarity to our culture in many respects provokes a constant tendency to projection, whereby one puts oneself in the kibbutznik's shoes, instead of seeing his reactions in themselves. This tendency is the more insidious as not one of the informants had been born in the kibbutz, being all either recent immigrants, or immigrants of an earlier period.

Notwithstanding the somewhat institutional quality of child care in the nurseries of many kibbutzim; notwithstanding the indications of a certain degree of insecurity among infants and junior children, these indications seem to subside during the latency period, serious emotional disturbance does not appear to be prevalent, and young adults who have passed through these stages appear to compare well in many respects with those of Western countries. They seem to be notably self-reliant, self-respecting, and full of a sense of worthy purpose in their lives, not like so many Western youths "in search of a soul." Their education seems to have achieved the major objective of turning them out basically well-adapted to a communal life, so that a large majority of them prefer such a life to the alternatives available outside, and willingly and even enthusiastically devote themselves to carrying it on. They have been conditioned from birth to find security and satisfaction in group living, they depend for their sense of well-being on comradeship and group solidarity, they find security in group decisions, which saves them from the sense of overwhelming responsibility from which young people elsewhere so often take refuge in totalitarian movements. It is often pointed out that the individual in the kibbutz is economically sheltered and secure, that he may be exposed to hardships but not to unemployment or destitution; but it would be wrong to imply that his need of security is stronger than his sense of responsibility. Kibbutzniks who lost a limb during the Arab war frequently renounced their right to return to the kibbutz and claim full support in exchange for such light work as they could do, because their self-respect did not permit them to enjoy the benefits of the kibbutz while unable to return a full contribution.[7] Collective education therefore seems to succeed in its primary aim of producing sociable, responsible and contented members of a collective society. But it is difficult to cultivate anything educationally so completely except at the expense of something else. If success is in the sphere of social adjustment, one would naturally look for the weak points in the realm of intimate personal relationships. The kibbutznik passes through adolescence with a minimum of rebellion and conflict with his parents, with whom his relations strike foreign observers as unusually friendly and harmonious. But it has been suggested that he tends to have considerable difficulty in the realm of sexual and parental adjustment. We have considered only the more obvious factors contributing to these difficulties, and the way in which a certain weakness in these respects is perhaps essential to the maintenance of this type of society.

Similarly, it is only possible to guess at a few of the factors which contribute to the mental health of the kibbutz child, and help to counterbalance the insecurity experienced in early childhood in consequence of his restricted enjoyment of family life. There is firstly a probable reduction of ambivalence owing to the non-authoritarian role of the parents, and possibly a lowered intensity of Oedipus conflicts, since the personal life of the parents is merged for him in the general adult life of the kibbutz. He does not, for instance, go to bed at night knowing that he is leaving them alone together or find

[7] D. Reifen, unpublished article.

them in bed in the morning, and he is very unlikely to witness or overhear sexual intercourse. The group seems to play a very important role as a source of satisfaction and security; this is a factor which could not be expected to counterbalance inadequate mothering until some time in the latency period, and is probably a major reason for the change from insecurity in early childhood to security and self-confidence in adolescence. It is probably also important that the kibbutz is a community which can be grasped as a whole at quite an early age, thus avoiding the bewildered sense of being an insignificant atom in an incomprehensible whole which tends to overwhelm urban children; and it is a community in which each individual has his role, his importance and his value. The kibbutz enjoys tremendous prestige in the wider community, and that on moral grounds; fashionable town-dwellers and distinguished intellectuals boast of their peasant relatives in settlements, and proudly dedicate their children to the movement. I believe the kibbutz is the repository of the ideals of modern Israel, as the religious devotees were for Jewry of the Dispersion, and the monastic communities for mediaeval Christendom. Every kibbutznik is aware that his fellows outside derive from him and his kind a renascent self-respect, fortified against the disparagement of their enemies by the demonstration that Jews can live by their own manual labour and the sweat of their brows, without exploitation and in voluntary austerity.

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A COMPARISON OF THE CHILD-REARING ENVIRONMENT OF UPPER-LOWER AND VERY LOW-LOWER CLASS FAMILIES

ELEANOR PAVENSTEDT

The observations reported are descriptive of two socio-economic groups at the two extremes of the lower class of an urban population on the East coast. You will see that there is a vast difference in the functioning of the families in the organized, stable, often upwardly mobile upper-lower class group* and the deprived, disorganized "multi-problem" families of the very low, lower-class group.† We are bringing this contrast to your attention in the hope that it will lead to a differentiated range of educational enrichment programs now being set up for deprived children.

These observations were made during home visits to families in the course of two different projects. The stable upper-lower class group constituted the bulk of the research population of a longitudinal study in child development.‡ The disorganized families in the low, lower-class group have received our assistance since 1955; they became the subjects of a demonstration project§ in 1960. For the sake of clarity we will refer to these two as

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*Referred to in sociological literature as the working class. See Gans, Herbert J.: The Urban Villagers, Chapter 11, pp. 229–262, The Free Press of Glencoe.

†The pathological segment of the lower class, ibid.

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"the stable group" and the "disorganized group."

Both studies were planned by child psychiatrists and were staffed by the usual child guidance disciplines, including a pediatrician, nurses with special training in mental health, educators and an anthropologist. The overall theoretical framework was psychoanalytic. Both studies initially were concerned with preschool children, since then followed into the first grades of grammar school. The mothers of the stable group were contacted in the prenatal clinic of a private hospital to which they had elected to come for care around their first pregnancy and delivery. In contrast, the families of the disorganized group already had one to three children under six when they first came to our attention on the obstetrical service of a city hospital or after having been referred by a community agency.

The 30 stable families lived mostly in flats or in three- and four-family houses. About 25 per cent of them lived in the same skid-row environment as the multi-problem families but never identified themselves with the neighborhood. Their goal was to move into the suburbs, and many of them by now (eight to ten years later) have achieved it. All were American-born from various ethnic backgrounds: Italian, Greek, Syrian, Negro, Irish and Anglo-Saxon. They were 85 per cent Catholic—Roman and Orthodox.

Since we accepted into the study only young families living separately where the mothers planned to stay at home, most Negro subjects we screened had to be eliminated.

In the history obtained of the courtship, the young couple's conscious goals seldom went beyond simple security. All of them wanted children and usually had some idea of the size family they would like, but they seldom had formulated ambitions for their children nor did they discuss matters of child-rearing together. The immediate future (the trousseau, preparations for the wedding and the apartment) were matters of great concern. Often both sides of the family helped. The apartments—usually in poor housing—were clean, bright and colorful but showed little taste. There were no books; only a few copies of such magazines as True Love, etc. Rarely was there any expressed interest in national or world affairs, despite the fact that the radio often was turned on high in the kitchen and the TV in the parlor. Bowling and roller-skating had been the chief interests of the mothers prior to marriage. The movies and visiting with family members and occasional friends now took their place. Intellectual interests on the part of a young man were viewed with suspicion.

When we first saw them, the women were still in factory, clerical or sales jobs engaged in upon leaving school. About half of them had graduated from high school. They were reluctant to cease working in the seventh month of pregnancy, fearing the loss of companionship, routine activity and their relative financial independence. Many of the men were taking courses under the G.I. bill to improve their employment. Most abandoned these as they were confronted by the cost of the delivery and the responsibility of becoming fathers. Instead, they took on extra jobs to supplement their small salaries from factory work, house painting, truck driving, mechanical repair work, etc. Only one man expressed his dissatisfaction later with the monotony and hopelessness of his occupational lot and one other continued to improve his situation with considerable support from a capable wife.

Psychological testing of the mothers revealed restriction of the personality as a general characteristic. We uncovered many circumscribed phobias of which the subjects themselves were hardly aware. We found it difficult to involve the young fathers in the study and would not have dared to propose psychological testing to them. They were, as a group, self-conscious and often timid with little confidence or push.

Born into this environment, the chil-

dren lacked intellectual stimulation. Our presence in their lives aroused their mothers' interest in many aspects of the children's development that otherwise would have passed unheeded. They bought toys at first resembling the developmental testing material and later the play material to which we had exposed them, including picture books and story books. Many of the mothers soon had families of two and three children. With a baby to carry and a toddler or two to propel down steep, ricketty stairs, most mothers preferred to remain at home, especially when they were pregnant. The streets where they lived offered little safety and no attraction. The husbands, by and large, did the weekly marketing; with their help Saturdays often were devoted to thorough housecleaning. Grandparents' and other relatives' homes were the most frequent destinations of Sunday trips. When the children were old enough to enjoy them, they were taken to children's amusement parks. The Greek women talked of their large group picnics but rarely attended them when the children were young. There were no trips to airports, to railroad stations, to the harbor or to zoos to give the children some experience with the world around them. Only a small number of the families vacationed in the country in the summer.

In this particular section of the population, mothers bottle-feed their children. Although they prop occasional bottles very early, they hold the children at many feedings. Before birth many mothers said they would let their babies scream so as not to spoil them. When the time came, however, they responded immediately to the infant's cry. The appropriateness of the response depended on the clarity of the child's cues and the mother's mothering gifts. After the first two months, however, many mothers returned to housekeeping routines and no longer tolerated as much interference with these tasks. The degree to which this was carried on depended again more on the individual mother's personality than on cultural usages. The same was true of permissiveness in self-feeding and messing with food.

Details of health care, i.e. bowel management, feeding, dressing, etc., were outlined by the pediatrician on our staff, but we observed that the mothers were just as likely to heed the advice of family members and neighbors. The majority were fairly adaptable as regards toilet training; they abandoned their efforts when the child showed no readiness to respond or objected strenuously.

The children of this group were overtly neglected only by a few mothers who had serious character problems and then only briefly and under stress. As infants they seldom were separated. Later the mothers usually had one evening away from home while father or another relative baby-sat. The families were greatly concerned for the welfare of their children. The father who rebelled against his work told us he lived for his children. In most of these families they were the first concern. . . .

Fathers often became more involved in actually playing with the children, whereas the mothers participated only verbally while carrying on their housework. The extent to which the mothers entered into their children's fantasies was again a factor of the mothers' personality makeup. Considerable permissiveness was granted the children around coming into the parental bed at night.

The concept that children needed to be trained, to be taught to obey and conform was universal. Fear of delinquent behavior was widespread. There were many different methods used to instill parental standards. There was not a single home where the mother and father failed to ask themselves how they best could reach and manage their child, even though impulsivity, impatience and anger might break through at times and interfere with their plans. They never lost sight of their parental role. Except for short periods of special stress or depression, the children were carefully and affectionately supervised.

The mothers' voices often were

A comparison of the child-rearing environment of upper-lower and very low-lower class families

raised. They accused themselves of yelling at the children. This was perhaps the most frequent deterrent used. Physical punishment was rejected by only a few of the parents, and spankings sometimes were administered at a surprisingly early age. There was more teasing than we had had any awareness of. Some mothers in this group were determined to control their child, particularly a son,[1] from very early in life. Although the children sometimes bore the brunt of a parent's feelings toward another adult, a sincere effort was made to deal equitably with the child. Some mothers ruefully shared with us their awareness of such displacement of anger to the child.

As their children came of school age, parents showed more concern that they conform to the teacher's expectations than about learning per se. While teachers described mothers as cooperative and wanting to help and to do well for their children, it was often the father who took poor achievement more seriously and even helped their children with homework. Mothers frequently were protective, particularly of boys. In their adaptation to school, none of the children appeared to have discipline or behavior problems. In first grade some of them encountered difficulty in learning, but they managed to make sufficient improvement when pressure was brought to bear so that none of them had to repeat.

Let us turn now to the disorganized, grossly deprived, multi-problem families of our demonstration project. The women of this group, when first encountered by the writer in a reformatory, were inadequately diagnosed as schizoid personality or narcissistic character disorder. The ineffectiveness of our welfare, custodial and protective agencies in altering their lives and those of their children lay clearly exposed.

When they were re-encountered on the obstetrical service of a city hospital and found to be unreferable because of their failure to maintain constructive contacts with social agencies, we decided to go into their homes. We found them very suspicious and guarded but nevertheless accessible.

The anthropologist on our project called their culture fringe-skid row, or preferred to speak of it as a proto-culture since there are no values, rituals or directions.

As long as the staff consisted of only family workers, we were unable to obtain a clear picture of the children. The adults in the families were in constant crises. They completely absorbed the workers. We knew only that (contrary to what one might expect) the small children were seldom overtly aggressive or destructive or engaged in sexual exploits. We had seen them as shadowy, underfed little waifs with meaningless smiles, seldom toilet-trained, climbing into the laps of our visitors at every opportunity and attempting to ingratiate themselves.

It took months or often a year of skillful, especially adapted casework in the homes before the parents would allow their three- and four-year-olds to come to our nursery school.

When they finally allowed the teachers to pick up the children, no recognition was given either by the children or by the parents to the fact that they were leaving for the first time with people they hardly knew for a place they had seen only a few times. No goodbyes were said, no mother came to the window and no child spoke about his mother or home during the better part of two months. It gradually became clear that their *separation anxiety,* shared no doubt by the mothers, was so overwhelming that the thought of separation had to be completely avoided. After several months of attendance when they had begun to relate to their teacher the theme of desertion dominated their play. By now many of the mothers, too, were bidding the children goodbye.

This shared fear of separation gives us a clue to the intensity of distrust and suspicion these families feel toward organized, i.e. middle-class, society. The proposal that their children come to our nursery school aroused a fear that they would be exposing themselves to dangers

from outside against which experience had shown they were powerless. Their self-image was so degraded that they expected to be criticized and punished, deprived of their privacy and even of their children.

The marriages in this group do not follow racial, ethnic or religious lines. Separations, desertion, divorce, abandonment and neglect of children are commonplace. At other times parents defend themselves fiercely against having their children removed from the home. Petty crimes, alcoholism, prostitution and cohabitation often bring agents of the law down upon them. They feel rejected by the church whose laws they have offended. Most of them are chronic public relief clients and feel under critical scrutiny by social service agencies. Only the medical and para-medical professions minister to their needs without asking embarrassing questions or assuming a critical position, but these professional people also are feared.

Many of these families lived in housing projects. A few families lived in rooming houses where they shared bathroom facilities with other, often undesirable, boarders. When they lived in rundown "apartment" houses, the housing was only *sometimes* worse than in the other group, but the inside of the apartments was strikingly different. Disorder and evidence of household tasks begun but left unfinished often gave an impression of chaos. There was an occasional desultory attempt to brighten up the room with colorful paper curtains or ornaments, soon faded and dirty. In a number of the homes, the shades remained drawn the better part of the day. Bits of food and dirty dishes were found anywhere, and the smell of urine often pervaded the place. In many homes the beds had shabby stained mattresses and odd bits of blankets. The blaring of TV sets was deliberately used as a protection against the visitor and was toned down as he or she came to be accepted.

The youngest child usually was found in his crib in a back room. Diapers were changed infrequently. As often as not, a partially full bottle was somewhere in the crib beyond the baby's reach. During our visits, crying often remained unheeded while the mother discussed her own worries and needs, or she would hold the baby with little attention to his comfort. The outstanding characteristic in these homes was that activities were impulse-determined;[2] consistency was totally absent. The mother might stay in bed until noon while the children also were kept in bed or ran around unsupervised. Although families sometimes ate breakfast or dinner together, there was no pattern for anything. Until children had learned not to mess with food, the mothers fed them and prevented them from holding the spoon. Curiously enough, they always dressed their children, who were completely passive and expected to be dressed. Most children ran around in an undershirt and diapers until they were about two and a half years old. Then they were dressed, and only then let out to play. Once out-of-doors they received no supervision. We saw them standing around, holding onto some outdoor toy and watching other children play. Sometimes the mother called them to have something to eat or when it was getting dark. The children often came running in to ask for money to buy candy or ice cream. We saw children crying from some injury dash into the apartment, run past mother to their bed and continue to scream there. The mothers seldom inquired about their injuries or attempted to comfort them. Ridicule was as likely to be the response. There were no toys in children's rooms; the beds left little space to play. What toys there were usually were kept on shelves beyond the children's reach.

Poor planning on the mother's part made it necessary to wash large piles of clothes daily. The children apparently often wore each other's clothes to judge from the fit. None of the children owned anything; a recent gift might be taken away by a sibling without anyone's intervening. The parents often failed to

A comparison child-rearing environment of upper-lower and very low-lower class families

discriminate between the children. A parent, incensed by the behavior of one child, was seen dealing a blow to another child who was closer. Communication by means of words hardly existed. Directions were indefinite or hung unfinished in mid-air. Reprimands were often high-pitched and angry. The children usually were put to bed immediately after supper, regardless of their age. Although boys and girls slept in the same bed, a great issue was made of not looking at each other while undressing or bathing. As the children outgrew babyhood, the parents differentiated very little between the parent and child role. The parents' needs were as pressing and as often indulged as were those of the children. There was strong competition for the attention of helpful adults. All this grimness was interspersed with attempts at mothering which were not maintained because of the mother's tension and lack of self-control. Many of these mothers seemed to think nothing of leaving the home for hours on end with a four- or five-year-old in charge of the babies.

Children in such an environment have to learn to cope for themselves, and these children were extraordinarily adept in certain areas. Extremely skillful at reading their cues, they focused on adults and manipulated them so as to obtain the attention, praise, food, money or whatever else they wanted. Some people thought of this as "object hunger", i.e. the longing for a person who would provide an affectionate, giving relationship. No doubt the absence of anyone sufficiently attentive to the child to allow him to relate had led to this extreme alertness. However, the element of avoiding the adult's anger and sudden impulsive reactions contributed to it as well. They recognized a drunk on the street and were careful to keep their distance. They also manipulated other children and were able to gain possession of another child's toy without raising an outcry. As soon as they were allowed out, they ran errands, usually with a slip of paper. They learned early that you obtained things for money. They soon learned to keep secrets, to cover up for their parents and to say, "Mother isn't here," or, "Mother has a headache," when she was intoxicated.

In our nursery school we had ample opportunity to observe these children. We already have mentioned the total absence of separation anxiety at first. Actually all emotions were veiled. The children masked pleasure by clowning and grimacing and showed no distress when hurt. They wore wide smiles quite inappropriately. When disappointed or angry, they would fade away. When upset or anxious, they might become paralyzed or engage in some frantic repetitive activity. Nevertheless, many of them, surprisingly well-dressed for nursery school, had a certain charm.

Many of them formed their words so poorly that it was at first almost impossible to understand them at three and four years of age. Words were used imitatively and often quite out of context. Instructions, when attended to, were at times repeated but not translated into action. Concrete demonstrations were necessary.

The children were overly obedient in many instances. They never expected their requests to be fulfilled and might wander off while the adult was engaged in helping them. They failed to discriminate between adults and would just as soon run to a stranger. They didn't know the teachers' names and there was no carryover from day to day. There was considerable pseudo-independence and self-sufficiency but no negativism or self-assertion. They were hyper-alert to sounds outside and to the gestures of adults around them. . . .

The siblings seldom comforted or helped each other in trouble unless a younger sibling appealed directly to an older one. Then encouragement, praise or assistance was promptly forthcoming. A girl three and a half years old reported quite casually that when the baby cried during the night the parents wouldn't hear the infant; the girl then would get milk from the refrigerator, warm it and feed the baby. From what she had observed of

the child's activities at home the nursery school teacher felt this was a credible report.

The children were unbelievably greedy when food was presented to them. There was little evidence of fantasy. Animation of inanimate objects went far beyond the age norm. Suggestions about a picture of a dog (such as "take him down, put him on the floor") occurred daily.

The saddest, and to us the outstanding characteristic of this group with adults and children alike, was the self-devaluation. One little boy, when encouraged by the teacher to have her put his name on his drawing, wanted her to write "shitty Billy". Their lack of confidence in their ability to master was painfully reenacted with each new encounter.

Conclusion

We see a vast difference in child-rearing practices among these two subgroups of the lower socio-economic class. In the stable group we found parents assuming the parental role; children were cherished, cared for and trained in an organized home with daily routines.

Maturation of the child's total development proceeded as an epigenetic process. The children were the focus of the mothers' feelings; they were mutually involved with each other, and the father participated as well in this relationship, as did the siblings. Most of them learned to trust others and to look after themselves. Deviations of development, where they occurred, were tied to **pathology** of the parental personalities or of the individual child's equipment. Although initiative and self-assertion sometimes were lacking, especially in the boys, they were by age six ready to profit from first-grade public or parochial school instruction and able to participate in a learning experience.

Many of them, as toddlers, had appeared to us alert and capable. Since, according to most psychologists, developmental tests do not correlate with later intelligence tests, we cannot claim that good native intelligence was paralyzed as a result of absence of stimulation. We can only say that their cognitive development did not proceed as their early functioning had led us to anticipate. We had the impression that they learned in school because it was expected of them, seldom because they were excited about what their new skills might open up to them. Motivation to acquire knowledge was not often present, but a willingness to work for good marks and to please the teacher and parents was there.

A comparison of the child-rearing environment of upper-lower and very low-lower class families

This stable upper lower-class group is definitely educable. The parents rapidly shared in our interested observations and bought our toys for their children. If one could involve these families in enrichment programs and persuade them of the advantages of intellectual development for their children, one might be tapping a reliable resource for our manpower requirements since their overall personality development is at a reasonable level of maturity. The developmental point of view can enrich the study of socio-cultural groups and add another dimension to our preventive measures.

In the disorganized families, impulse-ridden adults led a chaotic existence in which the mothers barely managed to maintain a home (we had not accepted families unless the mother expressed a desire to do something for her children). The children seemed to have no individual personality for the parents. They never learned to trust and were constantly on the alert for the adults' reaction. Without anyone to relate to, they failed to learn communication and came to grips only with certain very circumscribed areas of their reality. They were immature little drifters.

We were unable to deter the parents in their determination to send the children to school just as soon as they were eligible to go—at five or five and a half. In large classes with their extreme concreteness of thinking they failed to grasp directions. Suspicion and anxiety concerning the adult's intentions made them unable to attend to the teacher's instructions. As

failure followed failure, they grew very anxious and shunned any learning task. It was impossible after six months in school for our psychologist to obtain the cooperation of several of the children in order to test them, for instance. Their mothers screamed at them, or shamed them when they came home with poor papers. Teachers (who said many of their children came to school hardly knowing their family names or where they lived) became understandably discouraged about teaching these abashed and disoriented children.

Upon superficial appraisal, it is not easy to distinguish between these two groups of children. They come from the same neighborhood and are equally well dressed. Yet they must be separated, for they require a totally different approach. Between these two groups there are, no doubt, many strata, each with a little more organization and internal stability than the one below.

Fortunately educators have become aroused to the plight of these deprived children. It is difficult to estimate how many of them now being offered special preparatory training are children from as grim an environment as the one we have been dealing with. In order to teach these children anything that will really take root, the teachers will have to overcome the children's distrust and demonstrate very concretely to them that they are consistently helpful adults who can be relied upon. In some new programs teachers are spending considerable time with the parents. Before they call upon the parents to encourage their children and exhort them to fulfill their supportive parental role, they will have to fill some of the parents' own needs. When one has never been given to, one cannot be expected to give. These parents, while superficially conforming, will be suspicious of teachers, for they, too, are representatives of the feared, middle-class, governing group.

The education of these children represents a complex task, since developmental issues other than the cognitive ones have to be dealt with. Progress cannot be expected to be maintained unless the parents receive help through especially adapted casework and group work.[3]

Perhaps a massive approach from the schools can convince the parents that society attributes some value to them and to their children. Only after we have altered their self-image can we expect them to find some value in their children. And only then will the children be able to sustain feelings of self-confidence and self-respect.

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CHINESE-AMERICAN CHILD-REARING PRACTICES AND JUVENILE DELINQUENCY

RICHARD T. SOLLENBERGER

Introduction

Twenty-five years ago, in his book *Shake Hands with the Dragon* (5), Carl Glick noted the absence of juvenile delinquency in Chinatown, New York. At that time, this circumstance may have resulted because there were very few juveniles in the area; but, since the repeal in 1943 of the Exclusion Act of 1881, the number of Chinese families there has increased phenomenally. The census of the Junior High School which serves Chinatown lists nearly 700 young Chinese between the ages of 12 and 16.

Although it is the policy of the Police Department not to release delinquency rates, either by ethnic group or by precinct, all those in the area concerned with young people confirm this lack of delinquent behavior. As the Youth Patrolmen in the Chinatown precinct expressed it: "Juvenile Delinquency is no problem."

Chinatown is a densely populated area of eight square blocks. It is estimated that 37,000 Chinese live within the immediate vicinity. Except for some high-rise apartments on the fringes, the houses are old, and the people live in walk-up flats above the merchants' stores. One small park is the only recreational facility.

These Chinese-Americans are a minority group with an alien culture. They suffer from many of the same discriminations as do other subordinate groups who are "highly visible." They are of low socioeconomic level, and there is a cultural conflict between the American-born youths and their Chinese-born parents. All of these conditions are usually mentioned as being causally related to delinquent behavior. Why then, is Chinatown noted for its relative lack of such behavior?

The author's hypothesis has been that the relative absence of aggressive behavior in general, and delinquent behavior in particular, among the young Chinese-Americans is a result of the differences in the cultural values, in the familial structure, and in the child-rearing practices of the Chinese, as compared to other ethnic groups.

Procedure

Preliminary Studies

In field research, in contrast with research on captive audiences, success depends upon the goodwill, the whims, and the foibles of individuals who are not necessarily interested in the project and who, at any time, might fail to give the needed support. Before the actual collection of data began, therefore, many hours were spent in talking to knowledgeable people in the area, people who were interested in the project and who could be called upon for support.[1] It was through these conversations that the author obtained a Chinese-speaking interviewer, a preliminary list of mothers who would be respondents, a room in the Chinese school for interviews, and a place for the investigator to live. At the time that the formal interviews began, July 1965, the investigator and his *raison d'être* were fairly well known in the neighborhood; acceptance and rapport had been established.

From Richard T. Sollenberger, "Chinese-American Child-Rearing Practices and Juvenile Delinquency," *Journal of Social Psychology*, Vol. 74 (1968), pp. 13–23. Reprinted by permission of the author and publisher.

[1]The investigator was fortunate in being sponsored by Dr. Marie Lelash who had been principal of the elementary school in Chinatown for 18 years and was beloved and respected by the entire community. Without her sponsorship, the project would have failed. Among the many who were so helpful, the author wishes to thank Youth Patrolman Mario Frieda and Sister Gabriel Marie. To Mrs. Harry Chin, who translated the Schedule into Chinese and did most of the interviewing in Chinese which was then translated into English, the author wishes to express special appreciation.

Subjects

The names of mothers who had a child near the age of five were obtained from the school rosters. Sixty-nine who were available and willing were interviewed. Here is no random sample, but the author believes that its characteristics do not differ from those of all the mothers in the area. The average age of the interviewees was 34 and that of the fathers 41. Forty-seven of the mothers—of these 39 had been in the United States less than 15 years—and 55 of the fathers were born in China; all came from Canton or the districts adjacent to Canton. Only six of the mothers and eight of the fathers had been educated beyond the high school level. Half of the mothers had occupations outside of the home, mostly as seamstresses in clothing factories. Although the occupational level of the fathers spread over the first six of Warner's seven categories (15, pp. 140–141), because of the large number of men who were cooks or waiters, 64 percent were in categories five and six.

In regard to the children whose rearing was described, 48 were under 7 years of age and the mean age was 6.2. Sixty-four percent were receiving Christian religious instruction in Sunday School. Exactly half attended the Chinese school after their regular school hours. By chance, they were fairly evenly divided between the sexes, 38 boys and 34 girls.

Only 14 families lived outside the core of Chinatown and the greatest distance away was eight blocks.

Participant Observer and Data for Informants

Although standardized interviews furnish data that can be categorized and analyzed statistically, there is always present a built-in source of error: i.e., do these verbal reports actually represent the behavior of the respondent in real life situations? Participant observer techniques and ecological studies are of value not only because they reveal original data, but also because they act as a check on the more formal results obtained by the standardized interview. The author was fortunate in obtaining a sublease on an apartment in Chinatown where he lived alone for seven weeks during the summer. Here he lived with the Chinese, patronized their stores and restaurants, observed their comings and goings every hour of the day and every day of the week, visited in their homes, invited young people to his apartment for refreshments and talk, and was continually listening and eventually recording the spontaneous remarks of innumerable people in the neighborhood. The author still does not know the degree of response bias that entered into the interview data, but it has been gratifying to discover that, aside from the invaluable insight into the culture, the informal notes substantiate the more formal data.

The Interview

The Sears, Maccoby, and Levin (14) interview schedule was given in its entirety. Although there were many questions in the schedule with which the author was not specifically concerned, the schedule was employed so that cross-cultural comparisons could be derived by others who have used, or who will use, the instrument with other populations. The schedule was translated into Chinese in order to have the translator interview 56 mothers in that language. Of the remaining 13 who were interviewed in English, seven were interviewed by a Chinese-American woman and six by the author. The interviews were tape-recorded and were about an hour in length. The Chinese interviews were then translated into English. The tapes were transcribed and coded by using the same code as the Cambridge Study.[2]

The informants were told that the investigator was interested in how mothers in the United States trained their children, and that other mothers in different parts of the United States have answered the same questions. The author wanted to have each mother talk about a specific child and, if there were several

[2]The codes of the original study by the Harvard group were obtained through the courtesy of Dr. Harry Levin.

children in the family, to talk about the one closest to 5 years of age.

The following census data were obtained: address, number of rooms, monthly rental, length of time in present residence, birthdate, birthplace, length of residence in the United States, place of origin in China, dialect spoken, occupation and amount of schooling of both father and mother, names and ages of other children, others in the household, school attended, attendance at church, Sunday School, and the Chinese School.

Results and Discussion

Nurturance Variables

Preliminary reading in the literature and conversations with those familiar with the Chinese culture indicated that the Chinese are in some respects more indulgent with their young children than are parents of the indigenous American culture. This is particularly true in the area of biological functions. Thus Hsu (8) reports that there is no punishment for lapses in toilet training before the child is 4 years old and that there is little or no enforcement of eating habits. Bunzel and her co-workers (2) have pointed out that the Chinese baby and young child are never put on a rigid schedule in regard to any biological function. They eat and sleep according to their needs and not according to the clock. The pattern of indulgence is borne out in the interviews and in the daily observations of life in Chinatown. Table 1 presents a comparison of our sample with the Cambridge sample on several variables. The percentages refer to those answering the questions.

All the differences in the table are significant at the .01 level.[3] One interesting aspect of permissiveness in which there were no differences is in infant feeding schedules: 30.6 percent of the American mothers and 31.4 percent of the Chinese mothers allowed the child to set its own schedule.

[3]The Cambridge data is presented for the sake of comparison only. For those who are interested, we have indicated when the differences between the two populations are statistically significant.

TABLE 1
Comparison of Cambridge and Chinese Parents on Certain Child-Rearing Variables

CHILD-REARING VARIABLE	CAMBRIDGE %	CAMBRIDGE N	CHINESE %	CHINESE N
Weaning from breast or bottle began after 23.9 months	1	356	35*	55
Weaning completed after 30 months	5	368	55*	54
Beginning of continuous bowel training after 15 months	19	360	66*	62
Bedtime after 8:30 to no specific time	9	313	98*	60
Bedtime before 7:30	71	313	0*	60

* $p < .01$.

The lack of concern with bedtime is corroborated by the observation that one sees in Chinese restaurants, even quite late in the evening, families with their small children. This observer, standing on a busy corner one evening, counted 17 small children pass him from 10:30 p.m. to 10:45 p.m.

The child is disciplined, but the punishment generally used is withdrawal from the social life of the family, or the deprivation of special privileges or objects, rather than physical punishment. Very rarely, if ever, is the child ridiculed. No mother reported that this form of discipline was used by the father, and very few of the mothers themselves resorted to it.

The rather gentle treatment of the first years probably builds up a feeling of security and confidence in the child, which may effectively counteract or reduce the frustrations of rigid discipline later on. The tolerant attitude toward training the young child is best expressed by the statement of Bunzel's informant: "A child under 3 years does not understand things, at 3 or 4 they understand but forget things quickly, but by 6 years of age their memory for commands and prohibitions is good enough so that demands can be, and are, more rigidly enforced" (2, p. 109).

Control of Aggression

One aspect of socialization, however, in which the Chinese parent is quite strict is in the control of aggressive behavior. This is shown in Tables 2, 3, and 4.

During the long, hot summer the author did not see a single instance of

young children or adolescents quarreling or bickering. The author was able to go on the annual Parochial School outing to Bear Mountain Park. This was an all-day trip, starting at eight in the morning and returning at nine at night. In the three busloads there were about 10 adults. It was a day of complete peace and harmony—no crying, no scolding, no scuffling or quarreling of any kind.

TABLE 2
Permissiveness for Aggression among Siblings (in Percentages)

DEGREE OF PERMISSIVENESS	CAMBRIDGE (n=308)	CHINESE (n=66)
Not at all permissive	6	44*
Moderately permissive	74	56*
Entirely permissive	20	0*

* $p < .01$.

TABLE 3
Level of Parents' Demands for Child to Be Aggressive in Appropriate Situations (in Percentages)

PARENTS' DEMANDS	CAMBRIDGE (n=367)	CHINESE (n=68)
None whatsoever.	4	74*
No statement that it should always be discouraged.	12	7
Slight demands. Child should fight back if bullied.	33	7*
Moderate demands. Defend self.	46	10*
High demands. Child should not ask for help.	5	2

* $p < .01$.

TABLE 4
Extent to Which Parents Have Pressured Child to Fight Back (Percentages)

PRESSURE EXERTED BY PARENTS	CAMBRIDGE (n=370)	CHINESE (n=66)
Never under any circumstances	18	74*
Occasional slight encouragement	17	18*
Moderate encouragement	38	8*
Urged strongly to defend self	12	0*
Punished child for running home for help	15	0*

* $p < .01$.

Greene, recounting his recent experience in Communist China was amazed by the lack of aggressiveness among young children:

> I have spent a lot of time watching children playing in the streets. They never fight. Why don't they? They never snatch—never, "that's mine." They not only never fight but they never cry. The only child I ever heard crying was one who was physically hurt. What's going on? (7, p. 60).

Chinese informants (4) report that older children are encouraged to set an example for their siblings in gentleness, manners, and willingness to acquiesce and they are constantly reminded to *jang* their younger siblings. *Jang* is explained as meaning (*a*) giving up pleasure or comfort in favor of someone else, (*b*) giving in during a quarrel, and (*c*) polite refusal in favor of someone else. Although the author did not hear this expression used, he found the spirit of *jang* prevalent in this community. Thus, from an early age the Chinese child is not only discouraged from fighting, but the positive values of sharing, not quarreling, and noncompetitiveness are stressed.

Education

The Chinese place a very high value on education. This stems not only from their traditional respect for learning, but also from the realization that it is an avenue by which their children will not only gain security, but the admiration and respect of others. Tables 5 and 6 reveal how important the mothers believe education to be for the child and their educational aspirations for the child.

TABLE 5
Degree of Importance for Child to Do Well in School (in Percentages)

IMPORTANCE	CAMBRIDGE (n=369)	CHINESE (n=69)
Unimportant	2	0
Not very important	7	0
Fairly important	20	4*
Important with reservations	35	23
Important with no reservations	25	32
Very important	11	41*

* $p < .01$.

TABLE 6
How Far Child Is Expected to Go in School (in Percentages)

EDUCATION LEVEL CHILD IS EXPECTED TO COMPLETE	CAMBRIDGE (n=368)	CHINESE (n=63)
Through grade school	0	0
High school; no mention of college	12	1
High school; college if he wants to	15	8
College	30	70*
Finish college	37*	16
Graduate school	6	5

* $p < .01$.

It is interesting to note that no mothers thought that it was not important for the child to do well in school and that only one did not expect her child to continue into college. These educational aspirations are much higher than most of the parents had experienced themselves.

Forty-seven percent of the mothers and 52 percent of the fathers had received no more than elementary school education. Inasmuch as two-thirds of the fathers are in the lower occupation groups, it is obvious that they are willing to make great sacrifices to further their children's education.

Family Life

One of the most important variables related to juvenile delinquency discovered by the Gluecks (6) was the disruption of the family. Among our Chinese informants the degree of harmony and integration within the families was obvious. None of the children had divorced or separated parents. As a matter of fact, divorce is a rarity among the Chinese. A personal communication from a Protestant minister, a Chinese, in Boston's Chinatown, states that in his 30 years' experience there he has not known of a single divorced Chinese family. The author specifically asked the clergy, social workers, and longtime residents in the community about divorce and none knew of any cases. One of our interviewees stated that her parents had been divorced.

From the interview data the mother's evaluation of the father was rated on a 7-point scale ranging from 1—highly critical of the father—to 7—mother makes a large number of admiring and commendatory statements about the father. Only 17 percent of the fathers were rated in the first three categories and 79 percent were rated in the highest three categories. There is also a mutual sharing of responsibility for the making of decisions in all aspects of family life. No mother reported that either she or the father had complete authority. In 47 percent of the families, the authority was equally divided.

The harmonious family relationship is exemplified by the number of family groups one so frequently observes strolling the streets together or eating together in restaurants; and it is not an uncommon sight to see fathers alone with their young children.

For centuries the social control of behavior has rested with the family, both immediate and extended (9). Although the Chinese delight in the antics of babies and young children, the child is much more than a source of amusement. He is the present evidence that the familial line will be carried on, and that the misfortunes of the dead will be alleviated by his good deeds on earth (2). The baby does not know it, but he already has an ascribed role which determines the attitudes and responses of elders toward him. He is first nurtured and protected, and then trained to bring honor to his family and to himself. This is why the Chinese place so much importance on proper upbringing and accept personal responsibility for the child's deviation from the cultural norms. We speak of the child as a **tabula rasa;** the Chinese expression for this is "the child is born as a white linen cloth, and the design which eventually appears upon it is due to the kind of training that he has had" (2). Teachers report that, if a note is sent home about a child's infraction of the rules, almost invariably the father will appear the next day and apologize for *his* failure in the proper upbringing of the child.

This responsibility not only is found in the immediate family but is also shared by the extended family. As one informant put it, "As you walk around the streets of Chinatown, you have a hundred cousins watching you." Hsu remarks that for the Chinese,

> Shame (not internalized guilt) arises from being out of touch with one's social relationship, a mistake in any proscribed convention. Where suppression is the major source of social control, the person is much more concerned with what he does in the presence of others (9, p. 234).

Proper codes of behavior, respect for the elderly, and especially filial piety are taught mainly through participation, observation, and imitation. The children learn by example and, because they are included in family and social gatherings, they have a wealth of opportunity to observe the behavior of adults and to interact with them. The fact that they are able to identify with good models plays an

important role in their socialization. On the basis of several experimental studies, Bandura (1) has shown that "persons who observe models who violated prohibitions more readily perform the prohibited acts than do persons who are exposed to models who conform." Robinson (13), in comparing two different urban areas, alike in socioeconomic and ethnic composition but one having a high delinquency rate and the other a low rate, comes to the conclusion that criminality is contagious and that children in high rate areas will become delinquent for this reason alone.

The Future

Although the delinquency rate among the Chinese is low, and has been so reported from Baltimore (10) to Singapore (12), there is a growing concern that it will not remain so as more and more of the youth assimilate American culture. As long ago as 1950, Lee (11) described the increased incidence of gang wars, thefts, and assault and battery in San Francisco's Chinatown, which is an older community than that of New York and, therefore, has had a higher proportion of American-born Chinese.

Until high school age, the youth are relatively isolated from contact with the wider, dominant culture of the city. They then scatter to high schools in various parts of Manhattan and participate more and more in the mainstream of American culture. The traditional values of their ancestors and parents, those restraining forces which we have mentioned above, are necessarily weakened; and they will identify more and more with Western cultural ways. They dress, talk, and participate in activities that are no different from those of other young Americans. They expect to, and do, date, dance, and form unchaperoned social groups, which to many of their parents is considered immoral. It is not uncommon to see a couple holding hands on the street and this kind of public show of affection would be unthinkable to the older generation. Several parents complained about the lack of respect that young people had for their elders.

All young people rebel against the proscriptions of their parents. However, within the framework of the permissive American culture, many of the Chinese customs appear to them to be much too rigid. Unless the parents recognize this, the conflict between the generations will increase and some of the really valuable ethical traditions will be lost in complete rebellion.

Summary and Conclusions

It was assumed that the low delinquency rate among the Chinese-Americans was due to their child-rearing practices, their cultural values, and their familial structure. Sixty-nine Chinese mothers were interviewed with the Sears, Maccoby, and Levin schedule. In addition, the investigator participated in the daily life of Chinatown for seven weeks. From the interview responses, observation of familial relations, and many discussions with people in the area, it would appear that the low delinquency rate, in spite of environmental variables which should favor such behavior, may be due to the following:

1. Through an abundance of nurturance and protection during early childhood, a reservoir of security and trust is built up, so that after the age of 6, when the rigid demands for conformity are expected, they will be accepted with a minimum of hostility.

2. From an early age, physical aggression is not only not encouraged but it is not tolerated.

3. The child comes from a close-knit, integrated family. He is reared in an atmosphere of mutual respect. Certain filial duties are expected of him and, on the other hand, the parents accept responsibility for his proper behavior.

4. Within the family, and within the community, the child is continuously in contact with good models of behavior after whom he patterns his own behavior.

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12

PERSONALITY

In the early days of scientific psychology, so little of a definitive nature was known about human behavior that researchers chose relatively simple, and often somewhat meaningless, problems for investigation. Besides, the reaction against armchair theorizing, and the need to appear scientific, caused a concentration on whatever might be quantified. The whole area of subjective perceptions and experience, which has contributed so richly to personality research, was either ignored or excluded as unrespectable.

However, several factors gave rise to an interest in personality, unquantifiable though it might be. One was a growing awareness of interrelationships among the bits and pieces of data erstwhile collected. Another was the influence of Freud and the psychoanalytic school, whose subjects were living people in real situations, not artificial, laboratory ones. Still another was the growing body of research from longitudinal studies, which revealed each individual's developmental pattern as unique.

There is still no generally agreed upon subject matter or clearly demarcated body of concepts recognized as belonging to the topic "Personality." Some writers subsume under the title all data indicating how people are alike, from which they derive a hypothetically average personality. Others emphasize the individual's uniqueness and concentrate on how people differ; and still others synthesize the two approaches.

Whatever general frame of reference is chosen, certain current research emphases can usually be identified—for instance, the stress on integrative principles, rather than on structure. Structure involves the stable, relatively enduring components of personality organization, and dynamics the motives, drives, and functional interplay of forces. Actually, such a distinction is artificial, for the individual is an integrated dynamic system, strongly affected by his past and moving toward the future. All aspects of his personality are complexly intertwined —constantly interacting and changing. Moreover, each individual is conceived of as unique, with his own behavioral organization and life style.

A related emphasis is the emphasis on individual cognitive style, as opposed to early concentration on perceptual and cognitive processes themselves. At about mid-century a revival of interest in the motivational factors of perception led psychologists to become increasingly aware of two basic related principles: first, that people try to make sense of what they perceive; and second, that their interpretations of **perceptual** phenomena depend on already-existing schemata, or sets, which predispose them to typical ways of experiencing the world. While each individual's style is in the final analysis unique, certain characteristic ways of perceiving, called perceptual and **cognitive styles**, are in the process of being identified by various researchers. For ex-

ample, among children, active and passive observers have been distinguished (Vernon, 1952). (The active observer analyzes, criticizes, and actively relates impressions to his own experiences; the passive observer simply receives impressions.) Another **typology** contrasts the conceptual and perceptual perceiver. In sorting blocks, the conceptual individual proceeds rationally, forming hypotheses; the perceptual person acts by trial and error, led by immediate impressions of stimuli (Hanfmann, 1941). Again, the visual child experiences the world primarily through his eyes, the **haptic** individual through touch and **kinesthesis**. Another common typology distinguishes analyzers and synthesizers. The **analyzer** concentrates on details and sees separate parts. The **synthesizer** perceives the field as a whole and misses details.

Witkin and his associates have distinguished **field-dependent** from **field-independent** individuals. The field-independent person is capable of isolating an object from compelling background forces; the field-dependent person cannot. For instance, the field-independent child could easily distinguish the hidden figures in the drawing of the foliage of a tree. The field-dependent child would simply perceive the drawing as a tree and be incapable of distinguishing the hidden drawings. Masculinity and increasing age are related to greater field independence.

While clear evidence for the meaningfulness of such styles does not exist, they are nevertheless important sources of hypotheses (Tyler, 1965). They also help build a bridge between our knowledge of cognitive and noncognitive process, for styles of perception have been shown to relate to personality traits.

Another important area of research concerns basic personality variables—for example, **neuroticism-integration** and **extraversion-introversion**. Among other traits cited as basic are intelligence, excitability, **ego** and **superego** strength, and tendency toward fantasy. Various tests have been designed for identifying basic traits, even among younger children (Lee et al., 1963).

Considerable interest has also focused on determining the consistency of basic traits. In a study at the Fels Institute, the same individuals have been studied periodically from birth to adulthood (Kagan & Moss, 1962). Among girls, passive reaction to frustration has proved to be a highly stable characteristic, among boys much less so. Competitiveness and aggressiveness have proved far more stable for boys than for girls. Also through longitudinal research, Escalona and Heider (1959) quite successfully predicted what individual children would be like in preschool years from case material assembled before the children were eight months old. When the predictions were matched with descriptions made at the later date by another investigator, two-thirds turned out to be correct. Some children proved more predictable than others and some traits more predictable than others. However, in general, each child insists on being himself. He may march straight through life or weave zigzag like a broken-field runner, but his course is his own.

Some emphases have been discarded and others retained; still others are relatively new. For instance, instinct, as an explanation for people's behavior, has been all but abandoned. The belief that experiences of infancy and early childhood are basic for later development has continued. Among newer emphases is the one on critical periods, or those periods when experiences may have especially crucial effects. Also of current concern is achievement motivation, chiefly among males. However, findings in this area are confusing, perhaps because the concept of achievement motive is broad and variously interpreted.

The various aspects of personality research must be viewed selectively, and the wheat sifted from the chaff. Data are often obtained from samples of volunteers, who can hardly be said to constitute an unbiased sample. Other sources of error are the instruments used and the experiments themselves (Rosenthal, 1963). However, several factors have tended to accelerate progress in personal-

ity research, one being the accessibility of computers, which permit the intercorrelation of complex variables. Another has been the proliferation of researchers and an infusion of research monies, which permit more sophisticated research endeavors and more ambitious projects than ever before. Progress in research techniques has been a corresponding improvement in personality theory.

Until recently, personality theory has been more a matter of gradual accretion than of significant empirical and theoretical breakthroughs. However, lately less effort has been expended on defending one's own theory and running down opposing ones, and more on pulling together available research and deriving meaningful hypotheses. More concern is being shown for broader patterns and less for picky detail, while insistence on carefully designed research and meaningful, worthwhile problems has increased.

The literature on personality has become so vast as to make any choice of readings for such a book as this quite arbitrary. However, each of the selections that follows represents an important aspect of personality research.

In the first article, J. McVicker Hunt examines the most critical new evidence relating to motivation and personality. Dr. Hunt, a distinguished author and editor, and former president of the American Psychological Association, is now a professor at the University of Illinois. Dr. Hunt concludes that all behavior is motivated, that emotional factors are indeed more important than cognitive factors in psychological development, that emotional attachments derive from gratification of libidinal or homeostatic needs, and that stress in infancy produces a proneness to anxiety.

The second selection, by Dr. William Kessen, Associate Professor of Psychology at the Child Study Center of Yale University, provides a critical overview of the most significant personality research relating to infants. There emerges the picture of a "competent," active infant, as opposed to the image of a "passive receptacle." Ever since Freud focused attention on the early years as the foundation-stone for later development, continuing interest has been shown in this area.

The third selection, by Dr. Benjamin S. Bloom, Professor of Education at the University of Chicago, summarizes certain of the most significant findings from an important longitudinal study of personality development. Such studies help make sense out of the nuclear explosion of research theory and help fit into place the jig-saw pieces of child personality. Dr. Bloom concludes that each child's life has its own trajectory; that is, it is target-seeking. At times the somewhat wobbly childish ego topples, but generally the child effects a workable compromise with destiny.

In the last paper, Dr. Bettye Caldwell of Syracuse University reviews the research and concludes that the critical period hypothesis is useful but needs refinements. She then makes suggestions for increasing the utility of the hypothesis.

Chapter twelve

TRADITIONAL PERSONALITY THEORY IN THE LIGHT OF RECENT EVIDENCE

J. McV. HUNT

Although science does ultimately yield a body of relatively definitive knowledge about a domain, it is in essence less this definitive knowledge that is science than the dynamic, self-corrective process of ongoing inquiry. This process of science, to quote Conant (1947, p. 37), consists in the "development of [I would prefer the phrase *creating of*] conceptual schemes" where the relative validity of competing concepts is tested against concept-directed observations so that "new concepts arise from . . . these observations [and experiments]." It has been common for many critics to contend that the failure of this dynamic yeast of science to get underway within our knowledge of persons results from the vagueness of the conceptual schemes which pass for personality theory. I wish to counter that any beliefs definite enough to make observed phenomena surprising or incredible constitute a suitable starting point. Moreover, a majority of personologists have been sharing a number of beliefs which are sufficiently definite to render a good many of the observations made since World War II, and some made earlier, very surprising and so incredible that they call for revision of these beliefs. My purpose in this paper is to state five of these beliefs and to synopsize some of the observations which they make surprising.

Are Personality Traits the Major Source of Behavioral Variance?

According to the first of these beliefs, the source of most of the variation in behavior resides within persons. Psychoanalysts, clinicians generally, **personologists**, and students of individual differences have shared this belief. Moreover, they have shared it in opposition to those social psychologists—their thought rooted in the work of C. H. Cooley (1902), George Herbert Mead (1934), and W. I. Thomas (see Volkart, 1951)—who have contended that the major source of the variation in behavior resides in the "situation."

In this context, individual differences have been conceived typically after the fashion of static dimensions and have been called traits. Those who have attempted to measure personality traits, however, have all too often found even the **reliability** and **validity** coefficients of their measures falling within a range of 0.2 and 0.5. If one takes the square of the coefficient of correlation as a rough, "rule-of-thumb" index of the proportion of the variance attributable to persons, it would appear to be limited to somewhere between 4 and 25 percent of the total. This is incredibly small for any source which is considered to be *the* basis of behavioral variation, but we personologists have blamed our instruments rather than our belief in the importance of static dimensional traits. Such results, when coupled with the opposition of the social psychologists, suggest the desirability of a direct attempt to determine the relative amounts of common-trait variance attributable to persons, to the modes-of-response which serve as indicators of the traits, and to situations. . . .

In the words of a Vermont farmer once quoted by Henry A. Murray, "people is mostly alike, but what difference they is can be powerful important." I am now guessing to be "powerful important" the variations in the meanings of situations to people and the variations in the modes-of-response they manifest. These results imply that, for either understanding variations of behavior or making clinical predictions, we should be looking toward instruments that will classify peo-

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ple in terms of the kinds of responses they make in various categories of situations. Osgood has provided us with the Semantic Differential, an important method of assessing the interaction between people and situations (Osgood, Suci, and Tannenbaum, 1957). Perhaps our own approach may also be helpful.

Is All Behavior Motivated?

The second belief which I wish to confront with evidence from recent investigation concerns personality dynamics or, particularly, motivation. It has most commonly taken the form of the assertion that "all behavior is motivated." In this form, which either originated with or was popularized by Freud, the assertion is indeed too vague to provide a basis for observational surprise, but Freud (1900, 1915), such physiologists as Cannon (1915), and such modern behavior theorists as Hull (1943), Miller and Dollard (1941), and Mowrer (1960), have all shared in filling out the statement so that it has come to say, "all behavior is motivated by painful stimulation, **homeostatic** need, sexual appetite, or by acquired drives, i.e., originally neutral stimuli which have been associated with painful stimuli, homeostatic need, or sex in the organism's past experience."

This is the well-known **drive-reduction** theory. According to this theory, the aim or function of every **instinct,** defense, action, habit, or phantasy is to reduce or to eliminate either stimulation or excitation within the nervous system. Once the assertion gets this form, it can readily provide the basis for observational surprise, for it implies that, in the absence of such motivation, organisms will become quiescent.

They do not become quiescent. I have reviewed these surprising observations elsewhere (1960, 1963a). It has been contended that I have reviewed them *ad nauseam,* so let me be brief here. These observations derive from the studies of play in children by Bühler (1928) and in animals by Beach (1945) and others, the studies of monkeys and chimpanzees manipulating puzzles by Harlow (1950) and by Harlow, Harlow, and Meyer (1950), the studies of spatial exploration in rats by Berlyne (1960) and by Nissen (1930), the studies of spontaneous alteration of rats in a T-maze by Montgomery (1953, 1955), the finding that monkeys will learn various things merely to get a peek at a new scene by Butler (1953), the studies of human beings under conditions of homogeneous input by Bexton, Heron, and Scott (1954), and the now classic studies by Hebb (1946) which found that fear in chimpanzees will occur with encountering something familiar in an unfamiliar guise.

Such evidence, however, has recently been given theoretical recognition in several unfortunate fashions. One of these is drive-naming. The literature is now full of drives (manipulative, exploratory, curiosity, etc.) and of needs (stimulus, change, etc.). This naming of new motives which merely describe the activities they are designed to explain, helps little. Moreover, in motive-naming, we are revisiting the instinct-naming which McDougall (1908) popularized early in this century but which was discredited just after World War I. We should know better.

A second unfortunate fashion of theoretical recognition is naming motives in terms of their telic significance. I refer to the "urge to mastery" promulgated by Ives Hendrick (1943) and to the concept of "competence motivation" proposed by Robert White (1959) in his excellent review of the evidence concerned. Unfortunately, concepts of **telic** significance seem to me to provide no means of developing hypotheses about antecedent-consequent relationships that can be tested against observations.

A third unfortunate fashion of theoretical recognition has consisted of postulating spontaneous activity. Some activity can be said to be spontaneous, from a descriptive standpoint, as Hebb has pointed out to me. But this does not make spontaneity a useful explanation, and I am indebted to my colleague, L. I.

O'Kelly, for noting that postulating spontaneous activity as an explanation may be just as useless as postulating a list of instincts and drives, and for precisely the same reasons.

As I see it, these various lines of evidence combine to indicate that a system and a mechanism of **motivation** inheres within the organism's informational interaction with its environmental circumstances. I have described this mechanism elsewhere (Hunt, 1963a). The news of its existence was, I believe, one of the implicit messages of that now classic book entitled *The Organization of Behavior* (Hebb, 1949). This message has since been made explicit, and it has been confirmed by various lines of evidence.

It is no easy matter to characterize properly what it is in the informational interaction with circumstances that is essential. I have termed it "**incongruity**" (Hunt, 1963a). By this term, I have intended to designate the discrepancy between the incoming information of the moment and that information already coded and stored within the brain in the course of previous encounters with the category of circumstances concerned. Berlyne (1960) uses the term "collative variables" and sees these underlying "arousal potential"; Festinger (1957) speaks of "**cognitive dissonance**"; Hebb (1949) has referred the matter to a stage of development in cortical organization; Munsinger and Kessen (1964) and Eckblad (1963), a Norwegian psychologist, are calling it "uncertainty." The role of arousal in this informational organism-environment interaction is also a moot point (see Hunt, 1963a). Whether there is one factor or several in it is another moot point. Nathan Isaacs, in Britain, likes to distinguish between novelty, for discrepancies between input and that already stored in mere information processing, and incongruity, where inputs are discrepant from established commitments and plans (personal communication). He may well be correct.

Whatever the essential character of this informational organism-environment interaction and its relationship to arousal turns out to be, there appears to be an optimum amount of it for each organism at any given time. I suspect that this optimum is to a considerable degree a function of experience, and that it may obey Helson's (1959) notion of the adaptation level. When a situation offers too much, i.e., when the inputs from a situation are too incongruous with the information already coded and stored, the organism withdraws as illustrated by Hebb's (1946) fearful chimpanzees, and by some of the human beings whom Festinger (1957) has found to be avoiding or discrediting information dissonant with their commitments and plans. On the other hand, when a situation offers too little incongruity, i.e., when the inputs from a situation are too similar to the information already in storage, boredom results, and the organism withdraws from that situation to seek another one offering more incongruity, stimulus-change, novelty, dissonance, uncertainty, or what-have-you. It is this seeking of incongruity which is apparently illustrated by the college students in the McGill experiments of Bexton, Heron, and Scott (1954) who refused to remain under conditions of homogeneous input even though they were paid $20 a day. It is this seeking of incongruity which is also illustrated by the fact that Butler's (1953) monkeys will learn merely in order to get a peek at the world outside their monotonous cage-situations, and by that early study of Nissen's (1930) in which rats left their familiar nests and crossed an electrified grid (one of Worden's obstructions) to get to a Dashiell maze filled with objects fresh and novel to them. This work of Nissen's never got into the textbooks, probably because it was too dissonant with the traditional propositions about motivation presented therein.

This line of conceptualizing has still largely unacknowledged implications for our traditional notions of both **psychodynamics** and psychological development. Both Sigmund Freud (1926) and

Anna Freud (1936) conceived of the mechanisms of defense as serving to protect a person from anxiety. Sigmund Freud, at least in his later days when he came to see repression as a consequence of anxiety rather than as its source, saw anxiety originating from castration threats, **Oedipal** anxieties, and other overwhelming intense experiences of painful stimulation. The fact that Hebb (1946) has found chimpanzees withdrawing from sources of input which could never have been associated with painful stimulation (by virtue of the fact that the infants had been reared under observation in the Yerkes Laboratory), coupled with the fact that Festinger (1957) and his students have found human subjects utilizing various strategies to avoid dissonant information, and coupled again with the fact that evidence dissonant with prevailing theories—like that of Nissen's early study—seldom gets into the textbooks, suggest that the mechanism of defense may sometimes, or may even typically, function chiefly to protect individuals from information too incongruous with that which they already have coded in the storage or with that already involved in their commitments and plans. Probably the most important category of stored information for this theoretical context is that concerning the self, as the theorizing of Hilgard (1949) and as the clinical observations and theorizing of Rogers (1951) and George Kelly (1955) would indicate. I dare not take the time to elaborate; here it must be enough to point a direction.

Within the domain of psychological development, it is generally believed that the existence of fears implies that the feared sources of input, when they are not themselves painful, have been associated in the past with painful stimulation. But separation anxiety (or perhaps **separation grief** is a better term) typically appears in infants who are least likely to have had the disappearance of a familiar adult associated with painful stimulation or intense homeostatic need. Moreover, this separation anxiety or grief does not develop while infants are still very young and at a stage of life when the painful stimulation from colic and homeostatic need would be most likely to be prominent. Instead, as the observations of Anna Freud and Burlingham (1944) have indicated, separation grief becomes prominent and prolonged only during the latter part of the first year and during the second year. It is significant to note that this is the time, according to the observations of Piaget (1936), that objects are beginning to have permanence. This emerging permanence of objects implies that some kind of coded template must have been gradually established within the brain-storage in the course of repeated encounters with these objects. Again, I dare not take time to elaborate. My main point is to bring to your attention these indications that there is a highly important system of motivation which is inherent in the organism's informational interaction with the environment and that it has a developmental basis in experience quite different from that of the now traditional acquired drives. I tend to think of this kind of motivation as "**intrinsic motivation**," a term which distinguishes it from the motivation deriving from painful stimulation, homeostatic need, and sexual appetite, all of which are extrinsic to the organism's informational interaction with the environment.

Traditional personality theory in the light of recent evidence

Are Emotional Factors So Much More Important than Cognitive Factors in Psychological Development?

The third belief which I wish to discuss in the light of recently uncovered evidence is also motivational and dynamic, but it is developmental as well. Freud probably did more to emphasize the importance of infantile experience in psychological development than anyone else in the history of thought. Freud's (1905) theory of psychosexual development put the emphasis on the fate of the instinctive modes of infantile pleasure-striving, i.e., sucking, elimination, and genitality. Freud's influence has led to the

very widespread belief among **personologists** that these extrinsic motivational or emotional factors are much more important in development than are cognitive factors. This minimization of the importance of cognitive and perceptual factors in early infantile, or preverbal, development has been abetted, moreover, by the beliefs in fixed intelligence and predetermined development so widely held among the earlier students of individual differences in intelligence.

Recent evidence indicates, perhaps, that just about the opposite should hold. Reviews of those relatively objective studies of the effects of the emotional factors pointed up in the theory of psychosexual development have generally tended to depreciate the importance of those factors (see Child, 1954; Hunt, 1946, 1956; Orlansky, 1949). Every study finding significant effects can be matched with another which does not. Moreover, the better controlled the study, the less likely is it to have found significant effects. Similarly, while infantile feeding-frustration in rats appeared to increase eating speed and hoarding in adulthood (Hunt, 1941; Hunt, *et al.,* 1947), thereby lending support to the importance of extrinsic motivational factors, these studies have not always been reproducible so far as the effect on hoarding is concerned (Marx, 1952; McKelvey and Marx, 1951). Moreover, having done the first of these studies, perhaps I should admit that I probably misinterpreted the facts anyway. Of course, it is still true that painful stimulation can inhibit eating and drinking and that prolonged failure to eat and drink can kill an organism. On the other hand, the studies of the effects of variations in the richness of early perceptual experience in animals have regularly shown (Forgays and Forgays, 1952; Forgus, 1954, 1955a, 1955b; Hymovitch, 1952) substantial effects on adult problem-solving. These studies have stemmed from Hebb's theorizing, and the first of the kind (Hebb, 1947) compared the performances of pet-reared rats with those of cage-reared rats in the Hebb-Williams (1946) test of animal intelligence. The pet-reared animals proved much superior to their cage-reared litter-mates. Thompson and Heron (1954) have made a similar experiment with dogs, and the evidence of the superiority of the pet-reared dogs over their cage-reared litter-mates is even more striking than that for rats. The fact that the evidence from dogs is stronger than that from rats suggests that the importance of early experience, and particularly the importance of early cognitive or perceptual experience, probably increases up the phylogenetic scale as that portion of the brain without direct connection to sensory input or motor outlet increases relative to the portion which does have direct sensory and/or motor connections (*i. e.,* with the size of what Hebb [1949] has termed the A/S ratio). Moreover, there is direct evidence that such effects can be generalized from animal subjects to human beings in studies by Goldfarb (see 1955 for summary) which indicate that being reared in an orphanage, where the variety of circumstances encountered is highly restricted, results at adolescence in lower intelligence, less ability to sustain a task, less attentiveness, and more problems in interpersonal relations than being reared in a foster home. Moreover, those findings of Dennis (1960) that 60 percent of the two-year-olds in a Teheran orphanage, where changes in ongoing stimulation were minimal, were not yet sitting up alone and that 85 percent of the four-year-olds were not yet walking alone, serve to dramatize how very much the factor of variety of circumstances encountered in infancy can affect the rate of development—even the rate of development of posture and locomotion.

As I see it, these various lines of evidence combine to indicate that cognitive experience—or, more precisely, the organism's informational interaction with the environment—can be as important for psychological development as emotions based on the fate of instincts, and perhaps it is typically more important. In corollary fashion, these same bits of evi-

dence would also appear to indicate that we have been wrong in our widespread belief that it is the intellectual characteristics of a person which are most nearly fixed by the genotype and that the emotional characteristics of a person are highly subject to substantial environmental influence. Although the life history is of considerable importance in the development of both types of characteristics, it appears that it may be the intellectual variety which is the more subject to substantial effects of environmental encounters, particularly those coming in early infancy.

Must Emotional Attachments Derive from Gratification of Libidinal or Homeostatic Needs?

According to a fourth belief commonly held by personologists, the emotional attachments to objects, persons, and places—called **cathexes** in psychoanalytic terminology—derive from their association with the gratification of libidinal or homeostatic needs. In his *Three Contributions to the Theory of Sex,* Freud (1905) not only assumed a separation of libidinal from nutritional needs, but he also attributed all object-cathexes to libidinal energy. . . .

More recently, it has been generally believed that such emotional attachment derives from the association of objects, persons, and places with homeostatic gratification. And so it is sometimes, but Harlow's (1958) work indicates that association with homeostatic gratification is far from the whole story. In his studies, you will recall, monkey babies, when frightened, went for solace to the soft **surrogate-mothers** covered with padded terry-cloth rather than to the wire surrogate-mothers on which they had sucked to gratify their need for food.

Nor can softness of contact be the whole story, for behavioral criteria defining emotional attachment appear to have another basis. Infants of various species appear to approach, to seek, and to take delight in objects which are becoming recognizably familiar in the course of repeated encounters (see Hunt, 1963b), and they show varying degrees of distress as these objects escape their perceptual ken. . . . Dr. Ina Uzgiris and I have got evidence consonant with this idea that the young human infant prefers a mobile which has been hanging over his crib to another mobile which he has never encountered before (Hunt and Uzgiris, 1964). Here, the term *prefers* is based on looking time. When the familiar mobile has been withdrawn for a time and is then returned with another unfamiliar one beside it, the infant looks more at the familiar than at the unfamiliar one. Similar phenomena of emotional attachment are to be found in animals. Since it is following an object and distress at its escape from perceptual ken that characterizes the one major component of what the **ethologists** (Heinroth, 1910; Lorenz, 1935; Thorpe, 1944) call "imprinting," it intrigues me to consider that this effort to follow and to keep interesting spectacles within view and the distress at losing them in lower mammals and birds may be a special case of this more general principle of emotional attachment deriving from recognitive familiarity. If this be sensible, and I believe it is, one can then relate the marked variation in the number of encounters required to establish such recognitive emotional attachments to Hebb's **A/S ratio**. There appears to be a progression in the number of encounters or in the amount of exposure time required, from two or three hours in the grey-leg goose, through two or three days in the sheep or deer, some two weeks in the monkey infant, and some six or so weeks in the chimpanzee infant, to some six or so months in the human infant. Maternal attachment appears to be another special case of this same principle, but it is well contaminated also with skin contacts and with the gratification of homeostatic need. In all probability, fear of strangers is a direct derivative comparable to the fear of the familiar in an unfamiliar guise found in adult chimpanzees by Hebb (1946) and already mentioned.

But following is alone no indication of emotional delight. Evidence of the delight comes from the infant's smile and laugh of recognition. Spitz (1946) and others have considered smiling to be a social response, one based, presumably, on the fact that the human face is repeatedly associated with homeostatic gratification, but Piaget's (1936) observations and those of my colleague, Dr. Uzgiris, indicate that the infant will smile and show laughing delight at the appearance of various objects which are merely becoming familiar with repeated encounters (Hunt, 1963b).

Such observations and considerations strongly suggest that recognitive familiarity is in itself a source of emotional attachment, and this attachment is attested further by the fact that separation grief always concerns familiar objects and persons and by the fact that such grief is but transient in infants too young to have established object permanence. In a sense, this is a further elaboration of the importance of that intrinsic system of motivation which inheres in the organism's informational interaction with the environment.

Do Encounters with Painful Stimulation in Infancy Result in Sensitivity and Proneness to Anxiety?

According to a fifth belief, which we may call the "trauma theory of anxiety," encounters with painful stimulation or strong homeostatic need inevitably leave a young child or a young animal prone to be sensitive and anxious in most situations. This trauma theory assumes the **conditioning** conception of fear. Thus, it is presumed that the various sources of inputs present immediately before and during encounters with painful stimulation will acquire the capacity to evoke the autonomic and central emotional features incorporated within the total response to painful stimulation.

In spite of Hebb's (1946) strong evidence to the contrary, most clinicians of all professions act as if *the only source* of anxious emotional disturbance were this association of originally neutral sources of input with pain. Recently, however, another source of evidence dissonant with this widely held belief has been the investigations of the effects of shocking infant animals before they are weaned. Although there may well be both species and strain differences in some of these effects, as indicated by reports—based on studies using mice as subjects—which deviate from those which I am about to mention (see Hall, 1934; Lindzey, *et al.,* 1960), rats shocked in infancy have been repeatedly found as adults to be less fearful than rats which have been left unmolested in the maternal nest. This is to say that they urinated less and defecated less in, were less hesitant to enter, and were more active in unfamiliar territory than were rats which had been left unmolested in the maternal nest (see Denenberg, 1962; Levine, 1959, 1961).

In two other investigations, moreover, rats shocked before weaning, with sufficient intensity to keep them squealing continually for three minutes each day, have been found as adults to require stronger shocks to instigate escape-activity than do rats left unmolested (Goldman, 1964; Griffiths, 1960). Finally, in a very recent study by Salama, one of my own students, rats shocked daily from their 11th through their 20th day were found to show much less "fixative effect" of shock after the choice-point in a T-maze than did rats left unmolested in the maternal nest or than did rats either gentled or handled for this same period (Salama and Hunt, 1964). . . .

It is very interesting in connection with these studies that Holmes (1935) has found the children of lower-class backgrounds from a day-care center to be less fearful than children of an upper-middle-class background from a nursery school. Holmes' study was conducted in 1935, right in the midst of the Great Depression, when children of lower-class parents could be expected to have encountered more painful stimulation and homeostatic need than children of the upper-middle-class. This result suggests that the findings from these animal studies may well generalize to human beings.

It is clear from the evidence that all of these studies tend to disconfirm the present formulation of the **trauma** theory of anxiety based on the conditioning principle as the only experiential basis for anxiousness. They also suggest that encounters with painful stimulation may serve instead to raise what Helson (1959) calls the adaptation level for painful stimulation and thereby to reduce its aversiveness. The force of such evidence is hardly yet sufficient to warrant—and certainly not sufficient to call for—a change in child-rearing practices, for trauma is also a fact. There are varieties of early experience that leave infants prone to be sensitive and anxious, but we cannot yet clearly specify their nature. Perhaps it should be remembered in connection with this evidence, however, that the Spartan culture survived for several centuries while holding to a belief that infants should be exposed to cold and to painful stimulation to prepare them to bear the dire exigencies of later life. . . .

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RESEARCH IN THE PSYCHOLOGICAL DEVELOPMENT OF INFANTS: AN OVERVIEW

WILLIAM KESSEN

The infant has not always been treated kindly by American psychologists. Although almost all theories—whether in the tradition of Watson, Freud, or Koffka—celebrate the importance of infant behavior, and claim that the baby is striking proof of the validity of their views, systematic empirical study of the child in his crucial first year has been an on-again, off-again affair. And for a number of reasons, not the least of which is the difficulty of seeing young children in the large numbers that we have at our command in studying the pre-school child or the adolescent. Once a child leaves the hospital after the lying-in period, he is not again easily available for research until he appears in nursery school. It may also be that the infant is so clearly one of us—in that he is human, and so clearly and incomprehensibly different, in that he is a baby—that we have, on occasion, escaped

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our frustration by constructing theoretical babies instead of observing real ones.

Happily, these disabilities no longer block research. There is evidence, and not only in the United States, that psychologists are studying the infant more closely than ever before. . . .

The first proposition about children to be considered, and perhaps the most obvious, is that *infants are various*—young children are different from one another. I may see a straw man when I speak against the notion that human infants at birth, like well-made cigarettes, cannot be distinguished from one another; but there is still abroad in psychology—at least in the academical variety—the feeling that children at birth are, by and large, pretty much undifferentiated protoplasm or no more than merely randomly varying beings. Whatever the present state is of the pure, undifferentiated position in the sociology of knowledge, evidence is accumulating that parents and nurses were right all along—stable differences in behavior can be detected in the first days of life. Hammond (1957) has shown the stability of physical growth patterns. Richmond and his colleagues at Syracuse (1955) have reported psychophysiological stabilities in the newborn. Thomas, Chess, Birch, and Hertzig (1960), although they have published only preliminary reports, have stated that on nine variables—among them, reactivity and irritability—they have found stability in children followed longitudinally over a period of two years. There are some suggestions in Bell's work (1960), and there are some findings in our work on newborns at Yale (1961), which tend to support a strong generalization that stable individual differences in a large number of behaviors—sucking, general movement, reactivity—exist very early in life. Yet, impressive as it is, the work on the assessment of individual differences among human infants has not, like some of the animal work, been "built out" from novel observations and speculations. Rather, it has come largely from the essential and tedious work of constructing adequate response measures. These advances in technology or method are clear and welcome, but they leave open two larger questions about individual differences.

First, what is the long-range stability or relevance of these differences? It is good to know that the newborn shows stable differences in activity level from his colleague in the next crib, but the importance of this observation is markedly reduced if the difference does not show up in some form later. Among the investigators, other than the Birch group, who have done some interesting speculative work on this score, is the French psychologist Stambak (1956). She has segregated two groups of infants—hypertonic and hypotonic—and has discussed the relation of this tendency to be active or quiet to such important developmental changes as onset of walking. In addition, the Czech group (Papoussk, 1961) is investigating the stability of the infant's behavior during conditioning over the first six months of life. Such studies are provocative curtain-raisers on the intricate question of behavioral stability in infancy.

There is a second question about which we have very little evidence. How are these early behavioral variations related to variations in the environment? How do different combinations of infant and caretaker mesh together? We can tag babies as active or quiet; we can make this discrimination in the first five or ten days of life. We can suspect, too, that some mothers like active babies and some mothers like quiet babies. What do you get when you combine an active baby with a mother who wanted a quiet one or a quiet baby with a mother who wanted an active one? We have very little to go on here, not only because of the obvious technical difficulties of longitudinal studies of this kind, and not only because of the fluidity of our ideas about what is important in the home, but also because, until recently, we have not had reliable ways of describing the young child's environment. The technical advance in the methods of describing newborn behavior

have not been matched by methods for describing the home. But here, again, there is promise. Schaefer, Bell, and Bayley (1959) have proposed a parent attitude scale. The important interview work of Sears, *et al.,* (1957) provides a framework for the description of parents' behavior. Rheingold (1960) has recently specified some of the dimensions of variation between home and institution. These papers point the way toward the time when a genuine analysis can be made of the interaction between mother and child. The word "genuine" reflects the hope that this analysis will not be a contaminated one; that we can make assessments of the status of the newborn, independent of observing the mother, and make assessment of the mother, independent of observing the child.

The next summary proposition that I want to suggest warrants detailed examination. I submit that *the young infant is not incompetent* or, by André-Thomas' (1954) catching phrase, "the neonate is not a neophyte."

We have passed the time, not so very long ago, when the newborn was considered to be sensorily bereft (*e.g.,* Preyer's contention that children are born deaf), but the notion of newborn incompetence persists. It has perhaps its strongest statement in the work of the psychoanalysts, especially Spitz (1959), who maintains the existence of a non-differentiated phase in early life, where the newborn does not code inputs at all. In this view of the infant, by no means limited to psychoanalysts, both the baby's sensory capacities and his response capacities are held to be severely limited. The trend of recent research is clearly against this conception of the child. Research on newborn behavior over the last five years has invariably added to the newborn's list of abilities. Peiper (1956) in his encyclopedic treatment, André-Thomas (1954) and his colleagues in Paris, Madame Ste. Anne-Desgassies, and Prechtl (1958) are among the workers who have discussed the extended sensory and response range of the newborn in some detail. Gorman and his associates (1959) have recently found in a study of acuity that the newborn has visual resolving powers which are not markedly inferior to those of the older child. From the research available on the competence of the newborn, let me present three studies in some detail as illustrative and somewhat representative of this newer view of the newborn.

The first study, by Blauvelt (1960), deals with the precision of at least one response the newborn makes. Following up earlier work of Prechtl on head-turning, Blauvelt has studied the baby's response to a very simple stimulation, in which the experimenter moves her finger from the tragus of the baby's ear—the baby lying on its back in the crib—toward the baby's mouth and then away again in a flat elliptical course. It turns out that the baby tracks this movement by turning his head at a speed and to a position that will reduce the distance between his mouth and the stimulating finger. He tracks this movement without special tuition; it is, if you like, built-in. The infant can pick up approaching stimulation and reduce the distance to it very quickly; he can "find" the approaching breast or bottle. What is impressive about this response is the precision of it. This is not the response of a wild newborn, flailing around uselessly and without direction; this is an organism making a precise and exact tracking response. It is a limited skill, to be sure, and certainly not widely generalizable to other activities, but it illustrates the responding precision of some newborn.

The second study illustrative of newborn competence may be one of the most important empirical research products of the last decade in infancy work. Bronshtein, Antonova, Kamenetskaya, Luppova, and Sytova (1958) have described a technique for assessing the limits of sensory differentiation in the infant that promises a precision in psychophysical description that has heretofore been possible only for the much older child. Briefly, the procedure is this. You permit or induce the child to suck, and record his rhythmic

response. If, during sucking, you sound a brief tone, say of 512 cycles/sec., the baby stops sucking. When the tone stops, the baby begins to suck again. To a second stimulation of the same tone, he will stop sucking. This sequence can be repeated four or five times for sounds and then when you sound your 512-cycle tone he goes on sucking without interruption. He has adapted to that sound. If, however, you now present a different tone, say one of 1,024 cycles, he will stop sucking. If he continues to suck on the application of the second stimulus, this is presumptive evidence that he cannot discriminate the two stimuli. If he does stop sucking on the second stimulus, if it "undoes the adaptation," then there is evidence that he can discriminate these two stimuli. If this technique is as sensitive as the Russians suggest, we will be able to find out more about the sensory capacities of the young infant than we can find out about the sensory capacities of young five- or six-year-olds. Bronshtein presents data to indicate that the infant makes clearly differential responses to variations in pitch, light intensity, and other stimulus changes. Lipsitt, at Brown, has adapted this technique to a study of olfactory stimulation and has found that not only is sucking inhibited and adapted in this fashion but so also is movement. Just as the Blauvelt study illustrates the possible response flexibility of the newborn, so the Bronshtein and Lipsitt studies indicate the remarkable amount of stimulus coding the newborn is capable of. The world of the infant is not a vast confusing "blob."

Consider yet a third study. In our work at Yale (1963), we have found that if you put a nipple in a baby's mouth, he will stop general movement at once, and when you take it out he will start moving again. This effect appears in the absence of nutrient; the nipple does not supply food—it only provides an opportunity to suck. And, this inhibition of movement takes place in the fourth or third or second, or even first day of life. The child is able to deal with a complex and vitally important input—namely, nipple or sucking—by a very regular response. Nor, apparently, does he have to learn either how to suck or how to quiet. There is of course the argument that he learned the responses *in utero,* but we have hardly advanced beyond Hippocrates' statement of that argument 2,500 years ago.

These studies suggest that the newborn has far greater capacities for sensory discrimination than could have been guessed a decade ago, and though less impressive, the evidence is beginning to indicate that he has surprising response competencies as well. But the evidence for newborn resourcefulness poses a peculiar paradox. To put the question very bluntly, if the human newborn is so capable, why does he not learn more? If he is so capable, why is he so stupid? These questions form the bridge to my next general proposition, one which seems so insecure that I have phrased it in the form of yet another question.

There is early adaptation, but is there early learning? The conflict represented in this question can be expressed simply enough. On the one hand the behavior of baby seems to change over the first few days of life. There are many examples; let me cite just one.

Peiper maintains that there are three techniques of infantile sucking. One of them is the response that most mammals use to get milk out of a breast; it is a lapping response that involves pressing the nipple against the roof of the mouth with the tongue and squeezing milk out of it. Another one is to reduce pressure inside the mouth so as to pull the milk in by a discrepancy in pressure. This is the way most babies suck from bottles. And the third, fairly infrequent technique —confined to bottle-fed babies for obvious reasons—is to bite hard at the back of the nipple and squirt milk into the mouth. This variation is interesting because babies apparently come to use one of these different patterns very quickly. They learn, if "learn" is appropriate, the kind of sucking to use.

The difficulty with calling this kind

of change "learning" arises from our failure to demonstrate early learning in a controlled setting. If the newborn is capable of this natural learning it should be possible for a psychologist to teach him something in a systematic learning study. And yet the evidence, controlled evidence for newborn learning, hardly exists. There is research by Marquis (1931), recently replicated in the USSR, showing that the baby adapts to a feeding rhythm, but the evidence does not support the conclusion that learning according to the usual theoretical models takes place in the period of early infancy. The Russians, with their strong demand for environmental control of behavior, have tried a large number of times to condition young infants. Sometimes they are successful; oftentimes they are not. Russian studies do not report conditioning in children under eight or nine days of age, and most conditioning studies indicate that it may take weeks or even months to condition an infant child in the Pavlovian mode (Dashkovskaya, 1953). How do we interpret this curious discrepancy between the fact that the human baby seems to adapt his sucking style and to his feeding routines on the one hand, and the difficulty that all investigators have had in demonstrating newborn learning on the other?[1]

The following three options seem available to us: First, in spite of my statements about newborn competence, there may be genuine neurological incapacity in the newborn. There is no such thing as early learning, in the usual sense, because the child is not complete. A case for this position can be made. There are data on myelinization, on changes in pattern of EEG, on developments of vision and prehension, on the appearance of smiling—to take the most obvious case—all of which can be used to bolster the view that the young infant is a neurologically deficient organism. Under this reading, how do we account for the changes in behavior that do take place? Perhaps by maintaining that the caretaker becomes more competent. This would be a case of training the parent to adapt more effectively to the child rather than teaching the child to adapt to his environment. And to the data from Bronshtein and Lipsitt on the ability of the young infant to make sensory discriminations, we would have to say, "True, infants can make sensory discriminations, but there is no associative coding; there is a deficiency in the hooking of links together."

The second answer, and the one I think that would be given by the learning analysts (Gewirtz, 1961), is that nobody has tackled the problem of early learning. In particular, holders of this position would maintain that the procedures of classical conditioning as used by the Russians are the wrong tactics. What we should do if we want to demonstrate early learning is to use instrumental techniques; that is, to make some effective reinforcement contingent on the occurrence of some response of the infant. For example, let the baby turn his head and then give him something to suck on. This is a testable proposition and it is being tested.

I would like to suggest a third possibility—an unpopular one. In brief, there may be experiential effects that are not learning. To put it another way, not all adaptation of the infant represents either classical conditioning or instrumental learning. I think it is inappropriate to maintain that all changes in behavior that can be related to the child's contact with the environment are the result of reinforcement contingencies. Of course, the instrumental learning position can be made to fit them, but it seems to me that such a forced fit results in theoretical vagueness and a weakening of the instrumental position. . . .

Consider one last generalization about infancy. It is one where contention, compromise, and reciprocation among theoretical positions has already resulted in general agreement. *The infant is active, and the relation of infant and caretaker is reciprocal.*

[1]The argument for early adaptation by the infant can probably be made much more forcefully, but a natural history of the first months of life remains to be written.

It is on this issue that the psychologist's view of the child has changed most dramatically in recent years. The model of the child which was drawn from Pavlov through Watson, and supported by the development of learning psychology in the United States, was of a recipient organism —a reactive one. Behavior at any particular time is the function of the current stimulating environment. This remains technically a sound view, but the effect of it on the psychology of the infant was to diminish our appreciation of how complicated and subtle is the child.

Not only can the child be usefully seen as active, rather than merely as reactive, but it may also be useful to think of even the infant as a problem-solver. Certainly the child, like the adult, can be seen as encountering problems in his environment. At least from the age of six months, the child's behavior can be discussed in terms of discrepancy, goal-seeking, means to an end, and so on. One student of children has not deviated from this view of the active searching child. Piaget and his students have seen the child, especially the infant, as being in a constant exchange with the environment, meeting its demands, and what American investigators somehow forgot, making its own demands on that environment.

The shift in point-of-view—to set the antithesis sharply—has been from the child who is a passive receptacle, into which learning and maturation pour knowledge and skills and affects until he is full, to the child as a complex, competent organism who, by acting on the environment and being acted on in turn, develops more elaborated and balanced ways of dealing with discrepancy, conflict, and dis-equilibrium. This shift, I believe, is of incalculable implication and seems to have been accepted to some degree by almost all students of children. Bowlby emphasizes the control by the child in crying and smiling; psychoanalytic theory makes more space for autonomous ego functions; child psychologists dedicated to a learning analysis speak of the child as active; and I suspect Piaget thinks of how he knew it all the time. But this shift only sets the problem for the psychology of the infant; questions abound. What is a "problem" for the infant? What is an environmental discrepancy for the newborn, for the six-month old, for a walker? Do Piaget's speculations about assimilation, accommodation, and equilibration have more than a metaphorical value? Can child psychologists follow the lead of psychologists of cognition in adults, who use computer analogies? Can we build a theory of cognitive development without the use of terms like reinforcement, drive, or dissonance resolution?

Only one thing seems certain. We are better equipped, with attitude and technique, to make a systematic and meaningful analysis of infant behavior than ever before. The current psychology of infant behavior, by and large, is managing to steer skillfully between the Scylla of "Oh, Oh, look what the baby did!" and the Charybdis of "But the theory says thus and so." We are engaging in hot, theoretical debate, but more and more the debate refers back to the child—back to the theory-illuminated facts.

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STABILITY AND CHANGE IN HUMAN CHARACTERISTICS

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Some Properties of Stable Characteristics

Throughout this work, we have attempted to select and describe what we believed to be stable characteristics. As a result, the reader may be left with a somewhat biased view of human characteristics. Not all human characteristics are stable. Some characteristics may change very rapidly over time, and others may fluctuate so much that it is not possible to determine which variant is "characteristic" of the individual. In retrospect, it is possible to generalize about some of the properties of characteristics which make them stable.

Many of the stable characteristics are cumulative in that the characteristic at one point in the individual's history includes the earlier development of the same characteristic. This is clearly true of height in which the measurement at age 5 includes all the height developed to age 4, plus the increment in height made between ages 4 and 5. This also appears to be true of many of the learned characteristics such as vocabulary, reading comprehension and other school achievement. In most of these characteristics, what has been learned or developed at one point in the individual's career is apparently still present and included in the measurement at a later point.

Stable characteristics appear to either be nonreversible or at least only partially reversible. This is a corollary of

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the cumulative nature of stable characteristics. Whatever height has been gained to age 4 will be present at age 5 even if there is no gain in height from ages 4 to 5. It is true that there may be a loss of height during old age, but generally whatever gain has been made at one period is still retained at a later period. We suspect that many of the characteristics we find to have a high degree of stability may have partial reversibility, but we are of the opinion that generally there will be very little relative decline in a characteristic except during a period of major physiological or organic change. Many of the learned characteristics may suffer some apparent decline or loss during a period in which there is little use of the learned skills or abilities. At least, the learned material is not as readily available to the individual at a later time as it was just after the completion of the learning, for example, a foreign language, mathematics, history, etc.

Many of the stable characteristics appear to undergo relatively rapid change during an early phase of their development followed by less rapid changes. Thus height growth for boys is almost as great during the 9 months from conception to birth as it is during the 9 years from age 3 to age 12. General intelligence appears to develop as much from conception to age 4 as it does during the 14 years from age 4 to age 18. At this point in our work, we are not entirely certain that this is a necessary condition for a stable characteristic. However, we do believe that it is likely that a higher degree of stability will generally be found in those characteristics which develop in a negatively accelerated way than in those characteristics which develop at a fairly uniform rate.

Stable characteristics are likely to be those that have an underlying structure or that are based on underlying patterns of personality, habits, and motivation. Thus general intelligence or general academic achievement must be manifestations of fundamental properties of the central nervous system as well as of an underlying pattern of basic habits, attitudes, and ways of relating to the world. Such characteristics are unlikely to be altered greatly unless the underlying structure or pattern is also changed. We would distinguish the underlying structure or pattern from the mode of expressing it. Thus aggressiveness may arise from an underlying personality makeup, but it may be expressed in many different ways. Girls at ages 4 to 7 may express aggressiveness in much the same ways as boys through actual physical violence, through shouting, or in some other overt way. As girls become more "ladylike" with age they must find more socially acceptable ways of expressing aggressiveness and they must resort to more subtle modes of venting it. The mode of expressing the underlying structure or pattern may be determined by cultural norms.

Closely related to this is the idea that a characteristic may be very stable although the expression of it may constantly change. The problems and tasks in a general intelligence test may be very different at ages 4, 8, and 16 such that a person with an I.Q. of 100 may be expected to do more complex problems at age 16 than he was expected to do at ages 8 or 4. It is this problem of securing comparable but different tasks at each age which makes the measurement of a stable characteristic very difficult. A vocabulary test for first grade children will be very different from a vocabulary test for high school graduates, although vocabulary development is a moderately stable characteristic. We have noted a number of instances in Chapter 5 in which the stability of a characteristic may be obscured by the lack of appropriate measures at different ages.

Stable characteristics are also likely to be those for which the cultural norms and values remain relatively constant. On this basis, we might expect certain social *values* to remain very stable, whereas political *opinions* might be expected to change relatively rapidly. General scholastic achievement may be very stable, whereas interest in art or science may shift with cultural norms and expecta-

tions. General interest in reading books and periodicals may be quite stable although the particular types of books read may vary from age to age.

Environment and Change

That the **environment** does influence change in a characteristic is documented throughout this work. Studies of identical twins reared together and reared apart demonstrate that the nature of the environments further document the extent which individuals, with presumably identical **genetic** characteristics, will develop in similar or very different ways. Also studies of the effect of *changes* in environments further document the extent to which the environment influences the development of particular characteristics. This is not to say that each characteristic is equally influenced by the environment. Thus educational achievement is rather obviously influenced by environmental differences, while height is likely to be influenced by the environment to a lesser degree. Nevertheless, without taking a position on the relative influence of heredity and environment, we cannot imagine any research worker or any research in disagreement with the basic proposition that *the environment is a determiner of the extent and kind of change taking place in a particular characteristic.*

What does emerge very consistently throughout this work is the moderate to high relationship between the *magnitude* of change in a particular unit of time and the environment in which the individual is as contrasted with the relatively low degree of relationship between the change index and the initial measure on the individual. Although the environments have only been measured in a very crude way, the evidence is clear that the increments for a particular characteristic are in part determined by the environment.

For a characteristic such as height which seems so clearly to be determined by genetic factors, we conceive of the environment as enabling the individual to attain his full potential or as blunting and distorting the skeletal development. Here, the variation in environment may be seen as variation in the extent to which the individual's full potential may be achieved.

In contrast with height, which is in large part determined by **heredity**, is school achievement which is more clearly determined by environment. Although there must be some genetic potential for learning, the direction the learning takes is most powerfully determined by the environment. Most children in one culture will learn to read, while no child in another culture may learn to read. Modern algebra will be learned by those who have an opportunity to learn it and it will not be learned by children who do not have this opportunity. General school achievement, as measured by the average of a set of achievement tests or the average of the marks assigned to each student by his teachers, is likely to be greatly affected by the home, peer group, and school environments in which the children live, play, and learn. There are clearly some environments which discourage school learning, while there are other environments which encourage and reinforce school learning. Whatever may have been the genetic potential for learning, there is little doubt that the environment will determine what is learned and even the extent to which learning does take place.

When we turn to interests, attitudes, and personality characteristics, we are of the view that the genetic and organic base must be relatively slight, while the direction and nature of these characteristics must be largely determined by the environment in which the individual develops.

Throughout this work we have attempted to demonstrate the general curve for the development of each characteristic. In most of these curves there appears to be a period of relatively rapid development, usually in the early years, followed by periods of less rapid development. Much of the growth of human characteristics seems to conform to a negatively accelerated curve which may be described as a **parabolic curve.** We should hasten to add that there are some

characteristics which appear to grow at a relatively constant rate. However, a most important generalization supported by our findings is that *growth is generally not in equal units per unit of time.* Admitting, then, that there are some exceptions to the proposition, we have been interested in the varying effects of the environment on a characteristic at different phases in its development. We would venture the proposition that *a characteristic can be more drastically affected by the environment in its most rapid period of growth than in its least rapid period of growth.* This proposition is logically supported by the rather obvious point that once a characteristic has reached its complete *development,* (height at age 20, intelligence or I.Q. at about 20, etc.) variations in the environment could have no further effect on that characteristic. Similarly, in a period of very *little development* of a characteristic, the variations in the environment could have very little effect on the characteristic. Moving then to the more and more rapid periods of development, we would anticipate that the environment would have more and more effect on the characteristic. Thus, to take a simple and rather extreme example, the gain in the height of boys from birth to age 3 is about 24% of mature stature, whereas the gain during the period age 3 to 6 represents about 9% of mature stature. It is likely that the environment could affect the development of stature more during the period of birth to 3 years than during the age period 3 to 6 years.

Powerful Environments and Change

Even the crude approximations of environments we have been able to estimate reveal sizable relationships with the measures of change. Where we have indications of extremely powerful environments, we find that the changes are relatively similar for all the individuals who are interacting with the environment. The proposition that for *powerful environments all the individuals in it will change in uniform ways* is an extreme statement which will rarely be completely supported by research findings.

Part of the difficulty in finding support for this proposition stems from the problems of measuring change. Change scores or measures are usually smaller in magnitude than initial or final measures and it is difficult to measure them reliably. Dressel and Mayhew (1954), Lord (1956, 1958), McNemar (1958), and Webster and Bereiter (1961) have pointed up the difficulty in securing reliable change measures and have suggested some statistical procedures for determining the reliability of change scores as well as procedures for increasing the reliability of change measures. Most frequently, aptitude and achievement tests are constructed in such a way that it is harder to secure significant changes on one part of the scale than on another. In a large number of studies it will be found that the changes by the students who score initially low are greater than the changes for the students who were initially high. We suspect that this unevenness of change scores may be largely attributed to the unevenness of the measuring scale. This unevenness stems from the combined effect of a ceiling on the test as well as the greater difficulty of the test items which can make the difference at the high end of the scale.

However, these are technical difficulties and there are techniques available to reduce their effect. Tests can be designed and constructed which will be more reliable and which can be used to secure reliable change scores. Tests can be designed which have much room for change at all points on the scale and which can more nearly approach equality of units. Such instruments will facilitate the development of absolute scales, such as we now have for height and weight.

In spite of these difficulties in measuring the effects of environments, we have found a few instances in which very powerful environments bring about very similar changes in the large majority of individuals. Such powerful environments represent rather extreme instances of abundance or deprivation and apparently

involve most individuals in them in very similar ways. That is, they are relatively uniform in preventing individuals from securing the necessary nutriments, learning experiences, or stimulation necessary for growth or they are so powerful in reaching all with the appropriate nutriments, experiences, and stimulation that all (or almost all) individuals are affected in similar ways and to similar extents. In such powerful environments only relatively few individuals are able to resist the effects of the environmental pressure.

In Chapter 6 we described such extreme environments and pointed up some of the results found on individuals in these environments. Perhaps the major point to be made about such environments is their pervasiveness, that is, the individual is completely engulfed in a situation which presses him from every angle toward a particular type of development or outcome. It is the extent to which a particular solution is overdetermined that makes for a powerful environment.

Environment and Stability

. . . We believe that the early environment is of crucial importance for three reasons. The first is based on the very rapid growth of selected characteristics in the early years and conceives of the variations in the early environment as so important because they shape these characteristics in their most rapid periods of formation. We have already referred in brief detail to the evidence for this.

However, another way of viewing the importance of the early environment has to do with the sequential nature of much of human development. Each characteristic is built on a base of that same characteristic at an earlier time or on the base of other characteristics which precede it in development. Hebb (1949) has pointed out the differences in activity and exploratory behavior of animals reared in very stimulating environments in contrast to those reared under very confining conditions. Such differences in initial behavior are of significance in determining the animal's activity and intelligence at later stages in its development. Erickson (1950) has described stages in the development of human beings and the ways in which the resolution of a developmental conflict at one stage will in turn affect the resolutions of subsequent developmental conflicts. The entire psychoanalytic theory and practice is based on a series of developmental stages (Freud, 1933; Freud, 1937; Horney, 1936; Sullivan, 1953) with the most crucial ones usually taking place before about age 6. The resolution of each stage has consequences for subsequent stages. Similarly, other more **eclectic** descriptions of development (Havighurst, 1953; Piaget, 1932; Murray, 1938; Gesell, 1945) emphasize the early years as the base for later development. All these theoretical as well as empirical descriptions of development point up the way in which the developments at one period are in part determined by the earlier developments and in turn influence and determine the nature of later developments. For each of these viewpoints, the developments that take place in the early years are crucial for all that follows.

A third reason for the crucial importance of the early environment and early experiences stems from learning theory. It is much easier to learn something new than it is to stamp out one set of learned behaviors and replace them by a new set. The effect of earlier learning on later learning is considered in most learning theories under such terms as habit, inhibition, and restructuring. Although each learning theory may explain the phenomena in different ways, most would agree that the first learning takes place more easily than a later one that is interfered with by an earlier learning. Observation of the difficulties one experiences in learning a new language after the adolescent period and the characteristic mispronunciations which tend to remain throughout life are illustrations of the same phenomena.

Several explanations for the difficulties in altering early learning and for the very powerful effects of the early learning have been advanced. Schachtel (1949) and McClelland (1951) believe that the

learning which takes place before language development is so powerful because it is not accessible to conscious memory. Others, such as Dollard and Miller (1950), Mowrer (1950), and Guthrie (1935), would attribute the power of early learning to the repeated reinforcement and overlearning over time such that the early learning becomes highly stabilized. More recently, the experimental work on imprinting in animals by Hess (1959) demonstrates the tremendous power of a short learning episode at critical moments in the early history of the organism. Hess has demonstrated that ducklings at ages of 9 to 20 hours may be imprinted to react to a wooden decoy duck as a mother duck in a ten minute learning experience and that the duckling will thereafter respond to the decoy duck in preference to real mother ducks.

Although it is possible that each type of explanation is sound, especially as it applies to different learning phenomena, all three tend to confirm the tremendous power of early learning and its resistance to later alteration or extinction.

The power of early learning must still, for humans, remain largely an inference drawn from theory, from descriptive developmental studies, and from quantitative longitudinal studies. In many respects, the attempts to describe the learning process as it takes place in the first few years of life are still far from satisfactory. We know more about the early learning of experimental animals than we do about human infants. In this writer's opinion, the most vital research problems in the behavioral sciences are those centered around the effects of early learning and early environments on humans.

Limits of Change

. . . To repeat again, one basic finding in this work is that less and less change is likely in a group or in an individual as the curve of development of a characteristic reaches a virtual plateau. Can educational and therapeutic techniques overcome this increasing limit to change? We are, at present, somewhat pessimistic about the possibility for significant change in a characteristic once a plateau has been reached in the curve of development of that characteristic. It is possible that very powerful environmental and/or therapeutic forces may overcome and alter the most stable of characteristics —this is yet to be demonstrated.

What is quite likely is that remedial and therapeutic techniques may enable the individual to *accept* his characteristics and to have less tension, anxiety, and emotion about them. It is also likely that an individual may be helped to express his characteristics in more socially acceptable or even in socially approved ways. For example, although *aggressiveness* may become a stable characteristic of an individual, he (or she) may learn how to express it in less violent and more socially acceptable ways. Furthermore, some individuals may learn how to channel this aggressiveness so as to become very productive in scientific, scholarly, or professional pursuits. The aggressive characteristics of a juvenile delinquent may become the acceptable behavior of a soldier in combat, a policeman on dangerous duty, or a scientific worker attacking a difficult problem.

Similarly, an individual may learn to use his level of general intelligence so effectively that he can accomplish much more intellectually than do others with much higher levels of general intelligence.

Thus, although we are pessimistic about producing major changes in a characteristic after it has reached a high level of stability, we are optimistic about the possibilities of the individual being helped to learn ways of utilizing his characteristics in more effective ways, both for his own welfare and for more productive contributions to society.

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THE USEFULNESS OF THE CRITICAL PERIOD HYPOTHESIS IN THE STUDY OF FILIATIVE BEHAVIOR

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When one is concerned with life processes, every time period is somehow critical, in that it must occur, be reacted to, and be assimilated into the life history of the organism. Yet for the person whose orientation to behavior study is developmental, the vaguely stated "critical period hypothesis" is likely to have considerable appeal. Some of this may stem from the pleasing dactylic rhythm of the term itself, some from the exciting connotation of developmental brinksmanship. What the hypothesis lacks in rigor of definition, it gains in semantic elasticity which enables it to be stretched, with varying degrees of tension, into almost any theoretical framework. It is equally at home in embryology, experimental teratology, psychoanalysis, educational theory, ethology, and genetic psychology. Acceptance of the concept by the experimentalists has given it respectability; its social and clinical implications have given it prestige. But, unless pragmatic considerations are also met, respectability and prestige will not indefinitely support a scientific construct.

In this paper I shall propose certain refinements which, it is hoped, will increase the utility of the hypothesis without in any way aspersing it. Then, in considering the problem of criterion behavior, I shall discuss a response measure which may have usefulness in heralding, in the human infant, the terminal points of a critical period for attachment or

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filiative behavior. Finally, I shall suggest a research strategy which, with respect to early human social behavior, should eventually make possible a definitive answer to the question raised by this symposium.

Refining the Hypothesis

Singular or Plural?

In this symposium there has been a tendency to speak of *the* critical period hypothesis, but, of course, that is a simplification and a misnomer. Rather, there can be many hypotheses about developmental periods which are critical, with respect to certain forms of behavior (*e.g.*, "imprinting," "motor development," "learning," "language facility," "formation of affectional bonds," etc.). Conceivably a critical period hypothesis could be stated—and perhaps should be—for every investigation in which "antecedent-consequent relationships" are sought.

In embryology, where the concept had its origin, there is no direct reference to behavioral events, but rather to time periods of maximum sensitivity or indifference, to chemical forces acting upon the cellular mass. Scott, *et al.* (1958, 1950), popularizing the term perhaps more than any other group, have been concerned largely with the socialization process and the differential impact of certain socializing experiences. Holding events constant, they have varied time and thus identified in various mammalian species, periods of relatively greater significance for social behavior. McGraw (1946) asserted that there are periods during which motor activity is particularly sensitive to practice effects. She designated these as critical periods, but did not highlight the term.

Traces of the hypothesis can also be seen in Havighurst's (1952) concept of developmental tasks. Watson and Caldwell (1959) have pointed out that the developmental aspects of Freudian theory could be recast into a critical period framework. And, finally, the all-embracing concept of "educational readiness" is an implicit critical period hypothesis. Relating as it does to the learning process, the readiness version is not too different from the current statement of the hypothesis advanced by the imprinters (Hess, 1959b, 1958; Jaynes, 1957).

Thus, the critical period hypothesis, though generally spoken of in the singular, does not, in and of itself, refer to a limited class of behaviors, as does, say, the "frustration-aggression" hypothesis. The only necessary common denominator in these diverse applications of the concept is a developmental orientation, a research design in which time is one of the independent variables. It seems appropriate to call attention to this rather obvious point, lest failure to establish a critical period for one type of behavior, be used as evidence to refute the general utility of the hypothesis rather than to deny its relevance in a specific behavioral context.

Beyond or During?

Currently the critical period hypothesis seems to be used in two distinct ways: (a) a critical period *beyond* which a given phenomenon will not appear (*i.e.*, a point in time which marks the onset of total indifference, or resistance, to certain patterns of stimulation); and (b) a critical period *during* which the organism is especially sensitive to various developmental modifiers, which, if introduced at a different time in the life cycle, would have little or no effect (*i.e.*, a period of maximum susceptibility).

At the embryological level, there are many data to support the first or "beyond" version of the hypothesis. For instance, it can be shown (Hamburger, 1954) that cell transplants, done *prior* to a certain critical time, will develop in conformity with the region to which they are transplanted; the same kind of transplant, done *after* the terminal point of the critical period is passed, will result in misplaced development of the organ, which would normally have emerged in the region from which the transplanted cells were taken.

The second, or "during" version of the critical period hypothesis is also im-

pressively supported at the cellular level. Vulnerability, as a function of time, has been demonstrated repeatedly by embryologists, in the experimental production of a host of congenital anomalies. The teratogen may vary but the timing must be precise. As Warkany (1947) states it, "Periods exist in which the organs are vulnerable, while at other times, they are immune to external factors." Embryologically, the hypothesis has more substance than a random time assignment; it has been demonstrated that the organ systems most affected are those which are showing maximum cellular proliferation at the time the stressor is introduced, while those which have passed or not quite reached the maximally proliferative stage are spared (Hamburger, 1947).

Scott (1958) asserts that, with respect to social behavior, the "beyond" version of the critical period hypothesis is no longer an hypothesis, but is, rather, an established generalization; to wit, there is a period early in life during which primary social relationships are established, and beyond which they either cannot be established or else will appear in distorted form. Such a categorical statement about human social behavior would be hazardous at this point, as most students of animal behavior have recognized.

Bowlby (1952) amasses empirical research and clinical data to support a "during" version of the hypothesis, in which maternal care is compared to the chemical "organizer" of embryonic development:

> In dealing here with the embryology of the human mind one is struck by a similarity with the embryological development of the human body, during the course of which undifferentiated tissues respond to the influence of chemical organizers. If growth is to proceed smoothly, the tissues must be exposed to the influence of the appropriate organizer at certain critical periods. In the same way, if mental development is to proceed smoothly, it would appear to be necessary for the undifferentiated psyche to be exposed during certain critical periods to the influence of the psychic organizer —the mother (p. 63).

Much of Bowlby's concern, however, is with the "beyond" statement of the hypothesis (*i.e.*, with the critical period beyond which deprivation of maternal care will result in permanently impaired offspring).

In calling attention to these two variations on a single theme, the author does not intend to imply that they are unrelated. Often the terminus of a sensitive critical period is assumed to designate also the critical point beyond which certain behaviors will not occur, an assumption which is not always justified. For example, Hess (1959b) has suggested that 13–16 hours after hatching is the critical period for imprinting in the duck; but this period of maximum sensitivity is not immediately succeeded by one of indifference. Modification of the organism with drugs (Hess, 1960, 1959c, 1957), or modification of the procedure (Jaynes, 1957) will result in a prolongation of the sensitive period.

In a recent study by Freedman, *et al.* (1961), the optimal period for socializing dogs was found to be 7–9 weeks. However, adequate socialization was possible through 13 weeks, beyond which the animal showed almost no response to the socializing procedure. Thus, in this instance, termination of the period of maximal sensitivity occurred several weeks before onset of the period of continuing resistance. It also seems likely that in other organisms and in other kinds of behaviors, one is not justified in assuming that the end of the period of maximum sensitivity automatically coincides with the beginning of the period of total indifference or resistance, the point beyond which the organism is unmodifiable with respect to a given behavioral parameter.

Nomothetic or Idiographic?

One further refinement of the critical period hypothesis pertains to interindividual variability with respect to the onset and termination of sensitive periods.

Even though a given critical period might, in itself, be extremely narrow, this does not mean that the onset of the period in different individuals would be equally narrow. That is, life age as measured from the moment of birth, and developmental or maturational age are not necessarily identical, a fact commonly recognized in comparisons between premature and full-term human infants.

A recent study by Gottlieb (1961) demonstrates this point in reference to Peking ducklings. No critical period for imprinting could be established in terms of post-hatch age, but more imprinting occurred on the 27th gestational day than any other. Undoubtedly this is a generally acknowledged fact, but one which seems often ignored as, for example, when Gray (1958) speculates about whether the critical period for the development of filial behavior in the human infant, is before or after six months.

Scott (1958) has emphasized that identification of critical periods in any single animal or breed of animals can best be achieved through an understanding of the pattern of neurophysiological changes which will facilitate new forms of social behavior. Because of the relative inaccessibility of the major sensory systems to external stimulation during the neonatal and transition periods, he discounts the permanent influence of social events occurring therein. However, between approximately three and seven weeks of age, changes in heart rate and EEG functioning give evidence of the possibility of establishment of neural connections between cortex and hypothalamus. As a consequence of these neurophysiological changes, this should be an especially sensitive period for the development of social responses; behaviorally, that is what they have observed. However, he stresses the fact that there are discernible differences in the rate of maturing of these different systems, and equally important individual differences. He estimates the variability to be approximately three to four days on either side of the average date of onset of a particular natural period, adding, "This means that when experimental procedures are employed in which time is the experimental variable, close attention must be paid to the breed and the state of individual development. Two litters of puppies of exactly the same chronological age could give completely different results" (p. 51). On the basis of the fact that the human life span is approximately six times that of the dog, he estimates that the variability of equivalent periods in the human infant—should they be determined—might be approximately six weeks.

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Critical Periods in Human Filiative Behavior

In the realm of human social behavior, the most frequent application of the critical period hypothesis seems to have been in the area of attachment behavior—what I have here termed "filiative" behavior. Dressed in both versions of the critical period hypothesis, the theoretical questions asked pertain to whether (1) there are periods during which the human infant is maximally sensitive to the social contacts with its mother, and during which affectional bonds are most easily cemented; and (2) whether, in the absence of mother-infant contact during the sensitive period, a durable infant-mother attachment can ever be established.

Many persons have been struck by the similarity between the emergence of the exclusive infant-mother affectional bond and the attachment behavior—(*i.e.*, imprinting)—experimentally induced in various precocial birds and mammals. The word currently used to describe this attachment is "filial" behavior, in that the imprinted bird will demonstrate certain aspects of species-typical filial responses —chiefly physical proximity or active pursuit—to the imprinting object, regardless of whether this object is an inanimate replica of the parent, a human adult, or something like a green cube moving about within the animal's visual field.

Early experiments (Lorenz, 1954; Ramsay, 1951) on imprinting suggested that the filial response to a neutral object

could not be elicited unless the imprinting was carried out soon after hatching. Most subsequent research has pointed toward a critical period of maximum susceptibility, though there is some difference of opinion about a critical point beyond which the response cannot be obtained. For a recent review covering much of this research, the reader is referred to Moltz (1960).

Suggestions from Clinical Data

The identification in experimental animals and birds of critical periods for filial behavior has led to a wealth of speculation about comparable periods in the human infant. Most of these estimates have been based upon clinical studies of infants and children in whom the normal limits of mother-infant behavior were exceeded—generally, institutionalized or hospitalized children. A review of the literature containing one or another tentative postulation shows that a fairly wide age spread has been covered, ranging roughly from three months to five years. In some of Goldfarb's studies (1955, 1949) one might conclude that age three is a terminus, but in one study (Goldfarb, 1943) a compound of age at institutionalization, plus length of institutionalization, essentially defined the critical period. Bowlby's (1952) affectionless psychopaths were found to have been deprived after six months in some cases, but after twelve months in a majority of cases. The Spitz studies (1946, 1945) are usually interpreted as suggesting that the second six-month period of the first year is more critical than the first six months, but he apparently changed his thinking somewhat, and concluded that serious damage was often done by changes of mother as early as three months (Bowlby, 1952). Gray (1958), considering the clinical literature, plus suggestions from animal studies, proposes that a critical period should range roughly from six weeks to six months. Scott, over the years, has grown increasingly wary about a possible critical period for socialization of the human infant. In 1950, he suggested that it might range from about 15 months to three years (Scott, 1950). In 1958, perhaps overwhelmed by the clinical literature, he was more cautious, suggesting that it might be as early as one month or six weeks or as late as 5–6 months.

Leon Yarrow (1960) has kindly given me permission to refer to some as yet unpublished data from what is, to my knowledge, the only carefully designed prospective study attempting to secure information on this issue. In this project, the effects of change in mother-figure, during infancy, on personality development are being investigated. Ninety-six cases placed in adoptive homes at different periods during the first year of life have now been followed for varying lengths of time. Criteria of the infant's reaction include maternal interviews and tests, and observations of the infants both immediately prior to and immediately following adoptive placement.

Findings to date indicate that some infants show disturbance as early as three months, and that 86 per cent of the cases placed at six months do so. Progressively more severe disturbance was found at each month interval from three to 12 months. Analysis of individual cases seemed to suggest that a superficial relationship with the temporary foster mother was associated with mild or no disturbance, whereas, an intense relationship was associated with more severe disturbance. These data, of course, pertain only to immediate post-placement response; as yet, he has no data about the later adjustment of the infants.

Selecting a Relevant Criterion Measure

These approaches to a designation of a critical period for filiative behavior are essentially negative; that is, they are based on cases in which a relationship either did not have an opportunity to develop, or else was disrupted after a time. One difficulty in approaching the problem in a positive way is that it is difficult to define filiative behavior during the infancy period. There is probably no other species in which the direction of effort in the mother-infant diad is so unidirectional.

No matter how much one might want to wax poetic about the struggle to develop and maintain independent breathing, elimination, etc., the human neonate pretty well "has it made." He doesn't have to get up and start scurrying about after the mother, or get on his feet and find the udder or teat for himself. Even freshly hatched tree-nesting birds, rather dependent creatures at first, must quickly learn to "open" and "gape" at the proper time, or else the parental food offering is likely to go into another hungry mouth, or to the bottom of the nest. Hess (1959a, 1959b) maintains, that amount of effort involved is one of the variables associated with strength of imprinting in the duck, with stronger imprinting occurring in response to greater amounts of effort. And, since the human infant exerts so little effort to demonstrate his attachment, we are sometimes "at a loss" to demonstrate it. We have no highly objective, readily observed response—like dashing off down a runway after a green cube, or walking over to the side of a male model decoy, to mention two of the criteria used in recent experiments on imprinting. Yet, if following during the immediate postnatal period is really an instance of filial behavior—as is generally interpreted—then we do indeed have such a response to observe in the human infant. We have *following*.

In view of the attention given the following response by ethologists and experimental psychologists, it is puzzling that so little attention has been paid to it in the human infant. Gray (1958) who has made some provocative speculations about imprinting in the human infant, disregards following and proposes instead that the smiling response is the motor equivalent of following in subprimate species. Since only speculation is possible at this stage, I am going to speculate that the motor equivalent of following is "following" (*i.e.*, visual pursuit). In many ways, the distance receptors of the human infant facilitate a type of contact with his principal caretaker that is not too different from the artificial laboratory situation for eliciting imprinting in precocial birds. Control of the oculomotor muscles develops quickly, and with them the young infant makes very effective pursuit movements. Scanning and searching of the maternal face are commonly reported observations during breast or bottle feeding sessions. Most mothers, and all manufacturers of expensive equipment for slightly older infants, know that the waking infant is likely to be more contented if somehow maintained in a vertical or near-vertical posture—"So he can see," the alert mother will tell you.

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Regardless of whether he sees, he indeed looks; and if his looked-at object moves, he follows. To offer more technical data, Graham, Matarazzo, and Caldwell (1956) and Wolff (1959) have demonstrated visual fixation and short pursuit in the human newborn; Griffiths (1954) scores fleeting regard of the examiner's face at one month; Cattell (1940) and Gesell (1941) place the item of "following a moving person with the eyes" at two months. Thus, in a social habitat with limited territory, the human infant at a very early age can follow the parent object. Later, when independent locomotion by any means has been established, the filiated infant adds total body movements to those of his eyes, and strives to maintain physical proximity, as well as visual contact, with the maternal object. In evolutionary terms, it is not hard to understand how the following response is adaptive; the infant, who maintains close proximity to his mother, has a greater likelihood of surviving, whether in a territory occupied by predatory beasts, or by electrical outlets, plastic bags, and abandoned refrigerators.

In a brilliant and provocative paper, Bowlby (1958) has called attention to the following response as one of five "component instinctual responses" likely to be involved in cementing the affectional bond between mother and infant (the others being sucking, clinging, crying, and smiling). In fact, he accords following a higher status than the oft-studied sucking response. Using essen-

tially the choice model of Hess (1958), the author is currently collecting data on some parameters of the following response in infants. Early returns demonstrate that the human infant does not initially follow any one person with the precision of the chicks of Gray and Howard (1957). After having been imprinted to one or the other of those experimenters, 10 of the 12 chicks correctly chose their own imprinter when given a choice between the two. It may be that some infants show the same exclusive pattern of following; only a great deal of empirical data will answer that question. At present, we know that, over a period of months, most infants *do* develop a preference for the mother as a followed object. This may simply be due to the fact that, in the natural environment, the mother is likely to be the most available following object. If so, this would permit social reinforcement to strengthen what may well be initially an unlearned response. The same sort of process undoubtedly operates with respect to the genesis of smiling and of vocalization, as demonstrated in the studies of Brackbill (1958) and Rheingold, Gewirtz, and Ross (1959).

Regardless of the process by which it is strengthened, once the choice for a specific person has been established, then we might say that the following response has matured. This maturation may offer an extremely important clue for the identification of critical attachment periods within a given infant. That is, the appearance of efficient visual pursuit of any human figure should herald the beginning of the critical period. Then, the abandonment of indiscriminate following and the distinct preference for a single followed object—that is, the mother—should signal the termination of this period. Add to this formula, if you will, the early onset of indiscriminate smiling and the later onset of stranger anxiety (or discriminated smiling), and you will have a larger set of variables in terms of which to make predictions.

One way of describing this interactive process is as a series of discrimination learning trials for the infant. Early in the process, he may respond to isolated stimulus characteristics possessed by the mother—(*e.g.,* the capacity to move around, a pair of eye-dots to release smiling, etc.)—but, by no means unique to her. Toward the end of his learning period, he is undoubtedly responding to far more subtle cues and to constellations of cues in such a way that individuals not possessing the total constellation (everyone except the mother) will be rejected. Viewed in this way, the critical period is simply "the length of the learning period required for the establishment of the discriminated filiative response."

There are many intriguing speculations possible, if one accepts the tenability of this explanation; furthermore, they are all amenable to experimental verification or refutation. For example, once this discriminated learning is successful, has the infant moved into a period of resistance—(i.e., a "beyond which" critical period)—to the establishment of a new filiative attachment, should transfer (adoption, foster home placement, etc.) be necessary? Yarrow's finding (1960) that infants transferred out of a good foster mother relationship react more negatively than those where the infant-mother relationship is poor, suggests that this may well be so. Or, on the other hand, is transfer from one maternal object to another safe so long as the learning has not yet reached criterion? The fact that the following response matures at different rates in different infants may help to explain the many different estimates of the time point beyond which new attachments are formed with difficulty, if at all. It is logical to assume that such learning would be more difficult in "polymatric" interpersonal environments; that is, the infant in an institution cared for by several mothers, rather than one mother, has a much more difficult discrimination program than the infant reared in a "monomatric" household.

Critical Periods or Critical Events?

This sketch of the kinds of response measures which might be useful in identifying a critical period for filiative behavior helps to anchor the hypothesis more firmly in a behavioral context. That is, the period is critical because of the events that occur therein, because of the state of the organism at that time, and because of the sequence in which the developmental events occur. These same boundaries might occur at three months and nine months in one child, or four weeks and three months in another. This suggests that it is dangerous to emphasize the *period* too strongly. Probably critical periods for filiative behavior will show general uniformity from one infant or child to another; just like "most" children walk around a year, talk a half a year later, and so on. But, as mentioned earlier, the wide individual differences in the maturation or learning of significant life functions, ought to caution us that time units do not seem to mean the same thing from one individual to another. Behavior is probably a more accurate signal of the time period the infant has reached than the time period is of the behavior to be expected.

The Critical Period for Determining the Critical Period?

When we are concerned with child behavior, we have the tendency to assume that the penultimate state—or even the antepenult—is the ultimate one. Often, in our well-designed studies, a short time period for evaluation is all that is available. On subsequent evaluations, Yarrow's cases (1960) may have changed significantly. A child deprived of an intense mother-child relationship during infancy may, in later childhood, be affectionless and unattached. Yet, it is entirely possible that this same child will be found to have certain adaptive characteristics for some later point in the developmental cycle. The same point also applies in reverse; early adaptability does not insure future adjustment.

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Much developmental learning must be quickly unlearned. For example, the baby for whom finger feeding and the swallowing of solid foods represent a triumph, must soon learn to wrap those fingers around a spoon, or still later to thrust and retrieve with a fork. Likewise, intense affiliative behavior to a specific person must weaken and be replaced by other attachments. The failure of an intense mother-child relationship to weaken is as maladaptive, both **ontogenetically** and phylogenetically, as courtship behavior from goose to human. Thus, when we scan for significant critical periods, we must not fail to consider ultimate (adult) as well as penultimate criteria. And when we are concerned with infant-mother affiliation, I can think of no better test period —at least not for females—than the period of mothering.

The most intriguing bit of current data relating to this point comes from Harlow (1961). The cloth mother-surrogates, so beautifully engineered and so effective for providing contact comfort and security for monkeys during their infancy and early childhood, seem to have been totally inadequate from the standpoint of fostering the normal species pattern of heterosexual and maternal behavior. That is, monkeys reared on the surrogates do not engage in species-modal heterosexual and mating behavior. At the time of this report, only three of the surrogate-reared monkeys have been impregnated and delivered infants, and their maternal behavior is described as bizarre and totally inadequate. Two of them were either abusive or indifferent, or both, to their infants, while the third was forced into a *little* mothering behavior by an infant willing to endure incredible physical punishment in order to attain maternal contact. To borrow Harlow's inimitable comments on these findings, ". . . baby love is strong and wonderful, but one simply cannot trust mothers."

Testing the Hypothesis

At this point, I am almost ready to offer my answer to the question raised by our symposium. In order for such an answer to be possible, it seems that we need to proceed along three lines:

1. Encouragement of an experimental **teratology** of behavior, using animals. Actually this is being done in admirable quantities—witness the work of members of this panel, Scott and his group, and many others too numerous to mention. Many behavioral **teratogens**, or anti-teratogens, have been employed experimentally, and this vast body of data needs to be collated and integrated. Experiments on animal adoptions, imposed separations, surrogate mothers, gentling and handling, the effects of drugs, and so on, are all relevant. Obviously, such animal research could not answer any specific questions about critical periods in human development, if we continue to orient the hypothesis *only* in terms of time. If, however, we posed questions more in terms of critical events, or sequences of events, then such research would help us to answer the question of whether such periods do exist, the amount of variability to be expected within a given species, and so on.

2. **Epidemiological** studies of relevant behavioral manifestations in humans. There are probably lurking around in old file cabinets, a wealth of clinical and social data which could and should be analyzed within a critical periods framework. Many a social agency must have in its files, material for a retrospective and less elegant version of the Yarrow study. Both retrospective and short-term epidemiological studies should be encouraged initially. Some critical periods may emerge as the result of an almost random search for possibly related stressors and behavioral effects, plus the interaction effects, as these are geared into the time machine of the life history. An interesting example of this approach is the finding by Wagenheim (1959) of an association in boys between measles contracted around the age of two and subsequent reading disability.

3. Prospective differential studies of human development. Retrospective studies can never be definitive, and in many of our investigations of the development of social behavior, we can never be experimental. Such studies need more than a one-point evaluation period. Only if repeated evaluations are arranged, can the question of reversibility—which is crucial to the critical period hypothesis—be dealt with adequately.

Summary

This paper has been concerned with formulating an answer to the question, "Is the critical period hypothesis useful in the study of filiative behavior of the human infant?" In general an affirmative answer has been implied, in that the hypothesis highlights an important fourth dimension for behavior theories (*i.e.*, it serves as a reminder that time, or timing, cannot be overlooked as a variable in making predictions about behavior). However, in order for the hypothesis to serve behavior theory as more than an orienting framework, certain refinements seem warranted:

1. We should be careful to distinguish the sensitive version from the resistance version of the hypothesis and not assume that the end of one marks the beginning of the other.

2. We should emphasize the events which make any given period critical, the sequence in which they occur, and the behavioral criteria which are to serve as proof of the criticality.

3. Prior to the designation of any one or more time periods as critical, we should make certain that a full range of possible time periods has been sampled.

In conclusion, the author cannot resist paraphrasing Orwell to propose that all periods are critical, only some are probably more critical than others.

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GLOSSARY

Note: Many of the terms defined here have multiple meanings, but in the interest of brevity only those meanings are given that are relevant to their usage in this volume. If you do not find a term listed exactly as it appears in the text, look under a related form.

affiliation motivation: A concern over establishing, maintaining, or restoring a positive affective relationship with another person.

amorphous: Shapeless; having no definite form.

anaclitic (developmental) identification: Identification based on the child's anxiety over the loss of a parent's love.

analyzer: One whose cognitive style involves concentration on details and perception of separate parts.

anthropolgy: The comparative study of the chief characteristics of man, including somatic characteristics, social habits and customs, language, and prehistory.

anthropomorphism: The ascription of human characteristics to gods, animals, or inanimate objects.

A/S ratio (Hebb): The relative proportions of ascendance and submission characteristic of particular behaviors.

autoeroticism: Masturbation; self-gratification of sexual desires.

behaviorism: An approach, or school, of psychology that treats objective, observable manifestations as critical for understanding human behavior. Subjective consciousness and feeling are dismissed as unessential or considered mediating processes between stimulus and response.

canalization: "Setting the stage" to produce particular thoughts or behaviors.

castration anxiety: In psychoanalytic theory, fears relating to injury or loss of the genitals as punishment for forbidden sexual desires.

catharsis (drive reduction): A cleansing or purgation. In Freudian terms, the patient purges his mind of repressed material (catharsis) by telling whatever comes into his mind (free association).

cathexis: The accumulation of mental and emotional energy investing an idea or object.

chloretone: A brand name for chlorobutanol, a compound used as an antibacterial preservative.

cognitive: Pertaining to those processes by means of which an individual becomes aware of objects and situations—for example, reasoning, learning, remembering, and problem solving.

cognitive dissonance: The condition that exists when new information is contrary to one's assumptions so that he lacks immediately relevant responses.

cognitive style: The characteristic way an individual organizes his approach to men-

tal tasks, including specific ways of relating to the problem at hand.

concept: The abstracted idea of something, which one may apply in generalizing other objects or ideas; the image of something that exists in one's mind.

conceptual impulsivity: The tendency of an individual to solve a problem by proposing the first hypothesis that occurs to him.

conditioning: In its classical sense, when two stimuli—an adequate one and an inadequate one—are presented simultaneously to an organism on successive occasions, the inadequate stimulus acquires the potential of evoking a response similar to that normally aroused by the other stimulus.

conscience: An individual's functional system of moral values, which determines his decisions about what is right or wrong.

correlation: The degree of relationship between different factors. The tendency of two or more variables to diverge is called *negative correlation,* the tendency of variables to occur together *positive correlation.*

creativity: The ability to find new solutions or novel syntheses of familiar ideas.

critical period: The time during which particular experiences may have especially profound and enduring effects.

cross-sectional research: A form of investigation in which groups of children at different levels of development are studied simultaneously.

culturally deprived: Lacking the material and non-material benefits normally enjoyed by members of a given society, especially because of poverty or membership in a disfavored group.

culture: The total way of life of a society, including its customs, knowledge, beliefs, morals, and institutions.

developmental psychology: The branch of psychology concerned with characteristic behaviors at successive stages of development and the processes involved in moving from one stage to another.

dorsal: Pertaining to the back or posterior side of the anatomy.

drive-reduction theory: The hypothesis that the motivation for all action is the need to reduce tension or aroused tissue activity.

eclectic: Composed of elements of various kinds, instead of just one kind, as an eclectic theory.

ecology: The branch of biology that deals with the relationships between living organisms and their environment.

ego: Self, person, or individual as distinguished from others; a person as thinking, feeling, willing, and distinguishing himself from the selves of others and from objects of his thought.

empathic (vicarious) learning: The process of acquiring new responses through experiencing a model's reinforcement vicariously.

entrepreneur: One who fends for himself and is willing to take chances in order to achieve.

environment: The summation of all those factors and conditions external to the organism and potentially capable of influencing it in some manner.

epidemiology: The study of the distribution of physical or mental disorders.

ethology: (1) The science of ethics. (2) The study of manners, customs, and morals.

eugenics, positive: The study and arrangement of conditions conducive to improving the mental and physical characteristics of future generations.

euphoria: A mood of well-being or feeling that all is well.

extrapolation: Estimate or inference *beyond* the known range on the basis of variables *within* the known range, from which estimated values may be assumed to follow.

extraversion-introversion: A trait dimension characterized by turning interests outside oneself, at the one extreme, and by avoiding social relations, at the other.

field-dependent: Capable of isolating an object from compelling background forces.

field-independent: Incapable of isolating an object from compelling background forces.

filiative behavior: Attachment behavior.

frustration: (1) The blocking of an ongoing activity. (2) The emotional state resulting from being blocked or defeated in the pursuit of some goal.

gene: An inferred submicroscopic structure within the chromosome, which constitutes the ultimate physical unit of heredity and is transmitted in the germ cell from parent to offspring.

genetics: The study of heredity.

genotype: The shared qualities or traits of a biologically defined group that constitute the basis for its classification.

haptic: Pertaining to the sense of touch.

heredity: (1) The totality of factors transmitted to an individual from his ancestors. (2) The process by which an organism produces comparable organisms, including mechanical details of transmission of such characters through factors in the germ plasm.

homeostasis: The maintenance of constancy of relations or equilibrium in the bodily processes.

hypothesis: An admittedly tentative explanation of a body of data.

identification: The process of merging one's goals with those of another or modeling after another.

imprinting: The "stamping in" of an experience that occurs at a relatively specific, or critical, period, usually early in life.

incongruity: The discrepancy between the incoming information of the moment and the information already coded and stored within the brain in the course of previous encounters with the category of circumstances concerned.

instinct: An enduring tendency to act in an organized way, which is innate, complex, relatively unvarying, and common to the species. More recently the term has been more loosely defined as behavior that results from maturation, rather than learning.

intelligence: The ability to learn and to apply what one learns, especially in new situations.

IQ (intelligence quotient): A value relating an individual's score on a standardized intelligence test to his age. The average IQ is 100.

IQ, constancy of: The relative stability of IQ over the years.

Jung, Carl: Swiss psychologist (1875–1961) who broke away from Freudian psychoanalysis and became a founder of the Zurich school of analytic psychology. He looked beyond analysis to synthesis, and emphasized the need to become a distinct individual.

kibbutzim: Collective agricultural settlements in Israel.

kinesthesis: The inherent need for muscular activity.

longitudinal research: The study of the same persons, objects, or situations over a period of time.

maturation: Developmental changes due to heredity, in contrast to those deriving from conditions of environment.

mental deficiency: (1) Synonym for mental retardation, which is now the preferred term. (2) Low intelligence that to some degree reduces coping ability.

mesomorph: An individual with a sturdy, upright posture and highly developed skeletal structure—in general, an athletic build.

metapelet (pl. metaplot): A nurse-housemother in charge of children's homes in the kibbutzim of Israel.

mongolism: A congenital mental condition characterized by slanting eyes, large tongue, flat skull, stubby fingers, and other physical abnormalities.

Montessori, Maria (1870–1952): The originator of a teaching methodology based on children's spontaneous interest in learning—that is, on intrinsic motivation.

morality: (1) That quality of conduct which makes it right or wrong. (2) Standards of right and wrong as defined by a particular society, and relating especially to those matters of greatest concern.

morphological: Pertaining to the form and structure of animals and plants.

motivation: The condition within the organism that stimulates behavior and determines its strength and direction; an inferred personal or organismic determiner (or energizer) of the strength and direction of action taken by the organism.

motivation, intrinsic: A highly important system of motivation that is inherent in the individual's perception of his environment, to be distinguished from that deriving from painful stimulation, homeostatic need, and sexual appetite, all of which are extrinsic to higher-level cognitive interaction with the environment.

neuroticism: A mild condition of neurosis (a mental disorder somewhat ill defined in character, but milder than psychosis.)

neuroticism-integration: A dimension of organization represented as a continuum from disorganization, at one extreme, to organization, at the other.

oedipal: Pertaining to the Oedipus complex, or the repressed desire of an individual for sex relations with the parent of the opposite sex. Specifically, the Oedipus complex relates to the boy's incestuous desire for his mother, but it often subsumes an analogous desire of the girl for her father (more properly called the Electra complex).

ontogenetic: Relating to the origin and development of an organism's life history.

operant conditioning: The establishment of a response through reinforcement.

organic: Pertaining to substances derived from organisms; bodily, as contrasted with mental.

organizer substance: A substance, produced for a limited time, that causes a tissue to assume a particular form.

parabolic curve: A plane curve formed by the intersection of a right circular cone with a plane parallel to a generator of the cone.

pathogenic: Causing disease.

pathology: A diseased, or abnormal, condition of the organism or its parts.

perception: A primarily cognitive (mental), rather than affective (emotional), process by which an individual gains an impression of some set of stimuli received through his senses and modified and interpreted by prior experience.

perinatal: Occurring at, or pertaining to, the time of birth.

personologist: One who studies personality as a distinct branch of psychology.

phenotype: That which actually makes its appearance in a living being; a *manifested* structure, condition, or function.

phenylketonuria (PKU): A type of mental retardation resulting from a metabolic deficiency.

phylogenetic: Pertaining to the origin and development of a characteristic in the race or other biological division.

Piaget, Jean (1896–): The Swiss psychologist who is this century's most prolific writer and theorist on child development and on developmental processes in particular. He is especially well known for his conceptual-stage theories.

predeterminism: The view that the organs and features of adulthood are hereditarily determined.

preformationism: The view that the organs and features of adulthood are preformed in the seed.

premature infant (premies): An infant born weighing less than 5 pounds or delivered earlier than 270 days after the presumed date of conception.

proprioceptive: Sensitive to position and movement of the body and its members.

Protestant Ethic: A set of ideas about man's spiritual relationships that emphasizes hard work, personal stewardship, pleasurelessness, and individual enterprise.

psychoanalyst: A practitioner of the techniques developed by Freud and his followers for uncovering human motivation.

psychoanalytic theory: A systematic approach to human behavior whose broad outlines were laid down by Sigmund Freud. It embraces a theory of psychotherapeutic techniques, research techniques for the investigation of personality functions, and a theory that emphasizes certain aspects of personality: the unconscious Id, the conscious Ego, and the largely unconscious Superego.

psychodynamics: The study of the mind in action.

psychopathology: The systematic investigation of abnormal mental conditions.

psychosomatic: (1) Pertaining to the mind-body relationship. (2) Having bodily symptoms of mental or emotional origin.

recapitulation: The concept that the development of the individual goes through stages representative of those followed in the evolution of the species.

receptor: A specialized nerve ending of the senses.

reflection impulsivity: A trait dimension describing the degree to which a child reflects upon the differential validity of alternative solution hypotheses in situations where many response possibilities are available simultaneously.

reinforcement: The increasing of the force or strength of a response.

reliability: In testing, the tendency of a measure to yield the same results on successive administrations.

sensorimotor: Relating to acts that depend upon the integrated functioning of sense organs and motor mechanisms.

sensory feedback theory of imitation: The theory (Mowrer, 1960) that if certain responses have been repeatedly reinforced, proprioceptive stimuli associated with these responses acquire secondary reinforcing properties.

separation anxiety (or grief): (1) A term often associated with the emotional reaction of infants to painful stimulation. (2) The intense homeostatic need characteristic of infants who experience the disappearance of a familiar adult.

Social Ethic: A set of ideas, recently acquiring prominence, emphasizing social adjustment and dependence on others.

socialization: The process by which an individual learns to behave like, and to get along with, others in his society and culture.

social sex role: The behaviors associated with playing the part of male or female.

socioeconomic: Involving a combination of social and economic factors.

sociometric technique: Broadly conceived, any quantitative study of group relationships.

somatopsychological: Pertaining to both body and mind as each interacts with the other.

somatotype: A particular type of body build.

stimulus-response: The concept that any particular energy change in the organism is inevitably followed by a certain response.

superego: Conscience; that aspect of the psyche which holds the id (primitive impulses) in check.

surrogate-mother: Any person or object, other than the mother, that performs

functions associated with the maternal role.

symbiosis: A relation between two species such that neither can live without the other.

synthesizer: One whose cognitive style involves perceiving the psychological field as a whole and missing details.

tabula rasa: Blank slate; the condition of the mind at birth before experience has "written" anything on it.

telic: Purposeful; directed toward an end.

teratogen: A substance that produces monsters or monstrous growths.

teratology: The division of embryology and pathology that deals with abnormal development and congenital malformations.

trait: An enduring or persistent characteristic that distinguishes one individual from another.

trauma: Any experience that inflicts serious physical or psychological shock upon the organism.

twins, dizygotic (fraternal): Twins that develop from two separate fertilized cells (zygotes) and that are thus no more alike genetically than other siblings. They may be of the same or opposite sex.

twins, monozygotic (identical): Twins that are formed by the division of a single fertilized ovum (zygote) and develop in one chorionic sac. Such twins are presumed to have identical heredity and are always of the same sex.

typology: (1) The study of types. (2) A particular system for the classification of types.

validity: A measure of the extent to which obtained test scores measure accurately what they are intended to measure.

ventral: Pertaining to the belly or to the belly side of the body.

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