Anterospective Data Following Childhood Loss of a Parent

II. Pathology, Performance, and Potential Among College Students

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In a recent article, I [9] reviewed retrospective studies concerning the frequency of childhood parental loss among delinquents and adult psychiatric patients, and extended the analysis of anterospective data provided by Hathaway and Monachesi [11] concerning the frequency of delinquency and high school dropout among a statewide sample of adolescents. Rates of delinquency, and of high school dropout among nondelinquents, were found to be elevated among those who had previously lost a parent by separation or divorce, and those who had lost the parent of the same sex by death.

There appears to be a dearth of studies involving relationships between psychopathology among college students and childhood loss of their parents. However, Ingham [14] reported a significantly higher frequency of parental separation among 138 neurotic college students than among 370 control students. He found no significant difference between neurotics and control subjects with respect to frequency of parental death by a median age of 22 years, but the latter cannot be regarded as a critical test of hypotheses relating adult psychopathology to loss of a parent of a specific sex during early childhood. This particular problem did not appear to concern the authors of a comprehensive book on the psychiatric problems of college students edited by Blaine and McArthur.[2] However, an extensive project currently under way at the Massachusetts Institute of Technology may provide some relevant data, although a preliminary analysis indicated no significant difference between those students who consulted a psychiatrist during their time at the Institute, and those who did not, relative to the death of a parent.[24]

Hollingshead and Redlich [13] have documented a relatively high prevalence of psychosis and antisocial behavior among those of low-socioeconomic status, in contrast with a relatively high prevalence of diagnosed and treated neurosis among those of high-socioeconomic status, (which also implies higher education and sufficient intellectual endowment to profit from it). It is not too surprising that other studies should have provided evidence of a low frequency of prior delinquency among college students,[10] and a low frequency of subsequent severe psychopathology (with the exception of suicide) among intellectually gifted students.[26] Since there are positive correlations between both socioeconomic status and intelligence of parents and offspring, and negative correlations between these variables and rates of mortality and divorce, we should also expect to find lower rates of parental loss by death or divorce among college students than among the general population. In addition, Langner and Michael [18] have supplied data suggesting that childhood loss of a parent may have a greater impact on mental health among those of low- than among those of high-socioeconomic status.

In a provocative biographical study of more than 400 famous men and women, Goertzel and Goertzel [7] provided considerable narrative evidence of childhood tribulations among a majority of these subjects. In their final chapter the authors remarked: "Three-fourths of the children are troubled—by poverty; by a broken home; by rejecting, overpossessive, estranged,

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or dominating parents; by financial ups and downs; by physical handicaps; or by parental dissatisfaction over the children's school failures or vocational choices." In their foreword they also stated, "It may be currently possible to be both creative and comfortable. We suspect it isn't, but our suspicions are not scientific data."

Shakespeare wrote that some are born great, some achieve greatness, and some have greatness thrust upon them. It may be relevant to ask whether those who achieve eminence tend to do so in spite of early adversity, or because of it. While academic achievement in college is neither a necessary nor sufficient antecedent of eminence in later life, it may still be of interest to explore relationships between academic performance and potential among those who have lost a parent during childhood. Here again the evidence is meager, but some years ago King [16] undertook a study of 30 overachievers and 30 underachievers attending Harvard University, these being defined as individuals who exceeded or fell short of their predicted rank listing by two or more standard deviations. In the overachieving group were six individuals who had lost their fathers by death before the age of 12, as compared with none in the underachieving group (exact $\chi^2=4.64$, with 1 df, and $P<0.05$).

The preceding studies have been reviewed in order to focus attention on possible relationships between childhood loss of a parent and either psychopathology or academic performance in college students. A separate but converging series of studies have focused on relationships between childhood absence of the father and psychosexual identification in the child. The latter psychological studies were initially concerned with the behavior of children whose fathers were temporarily absent from home on account of military service, but more recently have focused on differential verbal and math scores obtained on the Scholastic Aptitude Test of the College Entrance Examining Board.

Bach [1] compared the father fantasies of 20 children aged 6 to 10 years who were separated from their fathers with 20 whose fathers were still living at home, by means of a standardized doll-play technique. The children who were separated from their fathers produced an idealistic and feminine fantasy picture of the father when compared with the control children, who elaborated the father's aggressive tendencies. Sears [23] analyzed the doll-play records of 150 children aged 3, 4, and 5 years, approximately half of whom were separated from their fathers because of military service or divorce. During this age period, prolonged absence of the father from the home appeared to have several consequences on the doll-play aggression of boys, but very little effect on that of girls. In boys, such influence was seen in (*a*) lessened total aggression, (*b*) absence of difference from girls at the earlier age levels, and (*c*) a use of dolls as objects of aggression that seemed to imply less emphasis on maleness and femaleness of the dolls, and more on parent as compared to child. Stolz [25] found that after the return of fathers who had been absent, boys continued to be effeminate in overt behavior, but that they now manifested an increased amount of aggression in fantasy.

Lynn and Sawrey [19] studied 80 mother-child pairs from several neighboring small towns and their surroundings on the coast of Norway. In half of the families the father was a sailor who was absent from home most of the time, while in the other half the father was of similar occupational level but living at home. The findings suggested that boys whose fathers were absent tended to be more immature, to show more compensatory strivings towards masculinity, and to have a poorer adjustment with their peers than those whose fathers were present. It also appeared that girls whose father was absent became more dependent on their mothers than did those whose father was present.

Burton and Whiting [3] cited the preceding studies and certain crosscultural evidence as supporting their status-envy hypothesis, that the process of identification consists of the covert practice of the role of an envied status. According to this hypothesis a child maximally identifies with people who consume resources in his presence but who do not give him any. He does not identify with the people he loves unless they withhold from him something he wants. The authors further postulated that absence of the father produces in the boy cross-sex identification which is either acted out, or more usually, defended against by exaggerated masculine behavior.

The preceding theory of cross-sex identification provided the framework from which Carl-

smith [4] approached her analysis of data concerning differential Scholastic Aptitude Test scores among boys who had experienced early separation from their fathers. Male students ordinarily score higher on the math than on the verbal aptitude test, whereas the reverse is true of female students. Carlsmith found that relatively high verbal and low math aptitude scores were obtained by male students whose fathers had been absent for prolonged periods during their early childhood because of military service. This finding has also been reported by Funkenstein [6] and both authors interpreted it as evidence of a reversal in sex-role identification.

Nelsen and Maccoby [21] have questioned the assumption that relatively high verbal scores reflect a "feminine cognitive style" and that relatively high math scores reflect a "masculine cognitive style." The relative superiority of college males over college females in mathematics may be attributed to the differential degrees of training in high school. The relative superiority of college females on the verbal portion of the Scholastic Aptitude Test may be attributable to selection procedures for admission to college. Among Carlsmith's students who had been separated from their fathers, the latter authors noted that the tendency towards reversal of aptitude scores reflected a lowering of the math score rather than an elevation of the verbal score. They therefore considered an alternative hypothesis that this pattern of scores might be the result of tension or disturbance resulting from the absence or loss of the parent, which would interfere more with those cognitive functions most important in mathematical reasoning than with those especially required for performance on tests of verbal skills. They supplied additional data on almost 2,000 college students (1,537 males and 419 females). Relatively high verbal and low math patterns of ability were found among male subjects who reported that their fathers were not living; their mothers were not living and their fathers had remarried; their fathers were absent frequently or for long periods of time; they were punished only by their mothers; they almost never talked over personal problems with their fathers; they had been "mama's boys" or "daddy's boys"; they were often fearful of their fathers. These and other findings were not consistent enough to permit outright rejection of either the sex-typing or the tension-interference hypothesis, and the authors attempted to integrate both interpretations of the data.

The present study is not concerned with the temporary absence of a parent from the home, but with comparisons between college students who reported that their parents were still living together at the time of their application for admission, and students who had previously lost a parent by death or divorce. The various records available on these students were studied after they had left college, and the main comparisons between these groups will involve their histories of known emotional problems, academic performance, achievement in relation to aptitudes and other predictive indices, and differential aptitude scores.

Method

Carleton College is a small coeducational liberal arts college, with a broad and well-balanced program of undergraduate instruction. Former graduates have achieved distinction with similar frequency in the fields of science, social science, and the humanities.[17] During the years 1959 to 1965, I acted as a part-time consultant psychiatrist to the faculty and students of the college. For two of these years the college was without the services of a clinical psychologist to counsel students regarding emotional problems, and I saw such students on self-referral or referral by various members of the faculty. Retrospective data on childhood loss of a parent among these students (Table 1) led to the belief that an anterospective study of students reporting the loss of a parent prior to their admission to college might yield additional information.

For many years students have completed health records prior to their admission to the college, which have been filed permanently in the Student Health Service. Since 1956 a revised form has been in use which includes family history data concerning parental death and divorce. In the summer of 1964, these health records were used to identify all students admitted as freshmen during the five-year period 1956-1960 inclusive, who had reported the previous loss of a parent by death or divorce. A control sample of students whose parents were still living together was obtained by matching each index case with the next student in alphabetical sequence who was of the same sex and admitted as a freshman during the same five-year period. Each sample numbered 127 students, of whom 70 were male and 57 female. The 127 students who had lost a parent prior to admission consisted of 86 who reported the death of a parent and 41 who reported parental divorce.

Previously published annual catalog issues of the college bulletin revealed that the total number of students admitted as freshmen during the period 1956-1960 was 1,696, consisting of 930 men and 766 women.

TABLE 1.—*Retrospective Estimates of Parental Death and Divorce During Childhood*

Source and Nature of Estimates	Total No. in Sample *N*	Percentages Losing One or Both Parents: Father Dead: Including Both Parents Dead	Mother Dead: Including Both Parents Dead	Both Parents Dead	Parents Divorced
Hathaway and Monachesi (1963): data reported by statewide sample of Minnesota school children who were in 9th grade in spring of 1954: mean age 15.0 yr	11,329	5.46	1.96	0.168	6.42 (Separated or divorced)
Gregory (1965): actuarial estimates of orphanhood among total white population born in Minnesota in 1939, & attaining exact age of 15 yr in 1954	NA	5.61	2.55	0.224	—
Data reported prior to admission by all students admitted to Carleton College as freshmen during the years 1956-1960 inclusive: mean year of birth 1940, & mean age on application 17 ½ yr	1,696	3.83	1.77	0.354	2.42 *
Data reported prior to admission by all Carleton College students seen in psychiatric consultation by myself, during the years 1962-1964 inclusive: Mean year of birth 1942, & mean age on application 17 ½ yr	162	8.64	3.70	0.617	9.26
Statistical significance of the differences between the two samples of Carleton College students	*t* ratio probability (two-tailed)	2.13 $P < 0.05$	1.27 $P < 0.30$	0.42 $P < 0.70$	2.97 $P < 0.005$

* Percentage of all freshman students reporting parents divorced, plus three other students who reported one or both parents dead—but whose parents were also found to have been divorced previously.

The total numbers of men and of women, admitted during each of the five years, were used to develop expected numbers of students in each sample (one or both parents dead, parents divorced, parents living together) according to sex and year of admission. In all three groups the observed numbers of students corresponded closely with the numbers expected, and computations of χ^2 (with 9 df) were nonsignificant (6.70, 4.31, and 2.82 respectively). There was no differential tendency for men as compared with women, from homes broken by parental death or divorce, either to attend this college or to report prior death or divorce among their parents. These three samples of students were also found to be representative of the total population of freshmen from which they were drawn with respect to graduation status (Table 2).

Additional biographical data on all 254 students were obtained from the records of the Deans of Men and Women. In the case of students who had lost a parent by death or divorce, this included information on age of the student at the time of the loss, and remarriage of the parent with whom the student had remained. For all students in the study, it included information on the occupation and education of father, which permitted calculation of Hollingshead's two-factor index of social position,[12] and on education of mother. These records also contained the scores obtained by the students prior to admission of Scholastic Aptitude Tests (SAT) (verbal and math) and other tests scored by the College Entrance Examining Board (CEEB). The reliability of these tests, and their validity as predictors of academic performance, has been established.[15,22] However, Wolf[28] developed a

TABLE 2.—*Observed and Expected Frequencies of Parentally Deprived and Control Students, According to Graduation Status and Sex*

Graduation Status	Sex	Total No. Among Students Admitted as Freshmen 1956-1960 Inclusive	Observed and Expected Frequencies Amoung the Samples Drawn for Present Study: All Students Reporting One or Both Parents Dead O	E	All Students Reporting Parents Divorced O	E	Nondeprived Controls Equal in Numbers to Sum of Deprived O	E
Cum Laude (including magna et summa cum laude)	M	130	7	6.6	2	3.1	10	9.7
	F	131	7	6.6	3	3.2	8	9.8
Graduated (without distinction)	M	536	28	27.2	13	13.0	43	40.2
	F	385	18	19.5	9	9.3	22	28.8
Did not graduate	M	264	15	13.4	5	6.4	17	19.8
	F	250	11	12.7	9	6.0	27	18.7
All groups	Both	1,696	86		41		127	
χ^2 with 5 df		—	0.60		2.18		6.21	
Probability		—	$P < 0.99$		$P < 0.90$		$P < 0.30$	

further predictive index of academic performance among Carleton students, based on the verbal score of the SAT, the CEEB score in English composition, and the student's rank in high school. The resulting Carleton T-index (or E-index when high school rank was not available) was obtained on all students admitted during the period of this study, from tables kept in the office of the Director of Admissions. The latter provided me with the appropriate predictive index in the relatively small number of students for whom it could not be found in the records of the Dean of Men or Women. Some additional data on those students who graduated (particularly their major field of concentration and athletic achievement among male graduates) were most conveniently obtained from the records of the Placement Service, while the final grade index (cumulative grade point average) on all students was obtained from the office of the Registrar. In comparing the final grade index with various predictive indices for students in each sample, Thorndike's cautions were borne in mind regarding comparison between arbitrary groups defined as "overachievers" and "underachievers"[27] and correlation coefficients were computed separately for each sex (Table 4).

In assessing the frequency of psychopathology among various groups, the relatively small numbers involved made it necessary to adopt the definition that "anyone who consults a psychiatrist or psychologist should have his head examined." A positive history of psychological or psychiatric consultation during the four years after their admission to the college, includes all those students in the study who consulted the college counselor during the years 1956 to 1962, as well as those who consulted the college psychiatrist during the years 1959 to 1964, or were known to have sought such help elsewhere. Undoubtedly this definition results in the inclusion of a number of students with relatively trivial emotional problems, and the exclusion of some other students with much more severe pathology manifested either during or after their leaving college. However, it appeared appropriate to accept this crude definition of a case, in order to examine possible relationships between the presence of emotional problems, visits to the Student Health Service with somatic complaints, and academic performance, as well as childhood loss of a parent.

TABLE 3.—*Frequency of Visits to Student Health Service,* According to History of Known Psychiatric or Psychological Consultation*

Sex of Students & Frequency of Visits to Student Health Service (With Somatic Complaints) *	History of Psychiatric or Psychological Consultation		χ^2 1 DF
	Positive	Negative	
Male students			
<5 visits per year	1	52	
>5 visits per year	24	63	13.13 ‡
Female students			
<5 visits per year	5	55	
>5 visits per year	21	33	13.39 ‡

* Excluding visits to Student Health Service for routine immunizations or desensitization to allergens.

‡ P <0.001.

In the analysis of the results presented in the next section, χ^2 has been used to test the significance of deviations from expected frequency distributions. In all instances involving only 1 df, the exact formula for χ^2 was used.[5] The statistic t was used to test the significance of differences between percentages in Table 1. Binomial probabilities were computed to test the significance of certain combinations of rare events,[5] and tables were used to determine the significance of correlations between final grade index and various predictive indices in Table 4.

TABLE 4.—*Correlations Between Final Grade Index and Various Predictive Indices, According to Type of Parental Loss and Sex of Student*

Type of Parental Loss, & Sex of Student	No. Students in Group	Correlations Between Final Grade Index and Predictive Indices						
		CEEB Scholastic Aptitude Tests				Carleton College T-Index §	Father's Socio-economic Status ‖	Mother's Education
		Verbal Only	Math Only	Verbal +Math	Verbal −Math			
One or both parents dead								
Men	50	+0.32 *	+0.43 †	+0.42 †	−0.15	+0.60 ‡	+0.10	−0.09
Women	36	+0.59 ‡	+0.23	+0.45 †	+0.20	+0.63 ‡	+0.09	+0.11
Parents divorced								
Men	20	+0.39	+0.19	+0.34	+0.15	+0.51 *	+0.17	+0.09
Women	21	+0.51 *	+0.32	+0.53 *	+0.17	+0.60 †	−0.42	−0.12
Nondeprived controls								
Men	70	+0.48 ‡	+0.41 ‡	+0.51 ‡	+0.02	+0.58 ‡	0.00	−0.09
Women	57	+0.45 ‡	+0.33 *	+0.44 ‡	+0.07	+0.50 ‡	+0.04	−0.13

* P <0.05 indicates the significance of this deviation from zero.

† P <0.01 indicated the significance of this deviation from zero.

‡ P <0.001 indicates the significance of this deviation from zero.

§ Based on CEEB Verbal aptitude and English achievement tests, and on student's rank in high school.

‖ Based on Hollingshead's two-factor index of social position, using occupation and education. Signs have been reversed so that a positive correlation would indicate association between high-grade index and high-socioeconomic status.

Results

Table 1 shows certain retrospective estimates on frequencies of parental death and divorce during childhood. The first line consists of data obtained by Hathaway and Monachesi [11] from a statewide sample of Minnesota public school children who were in ninth grade in the spring of 1954. The second line shows comparable actuarial estimates of orphanhood developed by me [8] for the total population born in Minnesota in 1939 and attaining the age of 15 years in 1954. The latter estimates for Minnesota are approximately 20% lower than for the comparable total white population of the United States. The third line of this table shows the frequencies of childhood loss of a parent reported by all 1,696 students admitted to Carleton College as freshmen during the five-year period of this study. Although the majority of these students came from outside Minnesota, and they were roughly 2½ years older at the time the information was obtained, the frequencies reported were somewhat lower than the preceding estimates, as might be anticipated on the basis of socioeconomic status. However, it was noted in the preceding section that no differential distribution was found between male and female students, with respect to admission to this college after death or divorce of parents (or to the reporting of these events).

The fourth line of Table 1 shows the comparable data reported by all students seen in psychiatric consultation by myself during the years 1962-1964 inclusive. This information was checked against the data given by these students on their health service records prior to admission, and only one discrepancy was discovered (involving a student who had previously failed to report the divorce of her parents). When the latter figures are compared with the figures obtained for all Carleton admissions, however, it is evident that there is a much higher frequency of parental divorce reported by those who had consulted the college psychiatrist ($P<0.005$). The students who consulted the psychiatrist also reported more than twice the frequency of parental death during childhood, and the numbers reporting death of father were sufficient to attain probable significance ($P<0.05$). The findings with respect to parental divorce corroborate the earlier findings by Ingham,[14] whereas the suggestive findings with respect to parental death may be related to the lower age limit involved in the present study.

Table 2 shows the graduation status of all male and female students admitted as freshmen during the period 1956 through 1960, together with the observed and expected numbers in each category among the samples drawn for the present study. The close correspondence between these observed and expected frequencies gives additional confirmation that the samples were representative of the population from which they were drawn, and further indicates no relationship between prior loss of a parent by death or divorce and subsequent graduation status—provided that the student was selected for admission to college in the first place.

Among the total population of 1,696 students admitted as freshmen during the years 1956-1960, 61 females graduated magna or summa cum laude as compared with 46 males, a difference that is statistically significant (χ^2 5.97, with 1 df and $P<0.02$). However, there was no significant difference between the small numbers of such students expected and observed among the samples of students who had lost a parent or whose parents were still living together.

Out of the total population of 1,696 freshmen admitted during this five-year period, there were only seven students (four male and three female) who graduated summa cum laude, with a cumulative grade index of at least 2.95 out of a possible 3.00. Two of these seven students were males who had previously lost a parent by death, while none had reported losing a parent by divorce, and none fell into the control sample of students whose parents were living together. The exact binomial probability that these seven exceptional students should include *two or more* who had lost a parent by death is 0.0455 (ie, $P<0.05$). Alternately, out of four male students graduating summa cum laude, the exact binomial probability that *two or more* would have lost a parent by death comes to 0.0161 (ie, $P<0.02$). These figures provide support for King's findings,[16] and for the hypothesis that childhood loss of a parent by death may lead to exceptional striving for achievement, but the figures alone do not provide an adequate picture. In this instance, one of the two highly achieving males had lost a highly achieving father at the age of

16, whereas the other exceptional student had lost his mother at the age of 2 years and had not subsequently lived with his father, but alone with an older female relative. The latter student had experienced considerable psychological and psychophysiological difficulties.

The 127 students who had lost a parent during childhood were dichotomized in four ways—according to the type of loss (death or divorce), the sex of the parent lost, whether the loss occurred prior to age 10 years or subsequently, and whether the remaining parent remarried. Male and female students were considered separately and no significant association appeared between category of parental loss and subsequent graduation status. Using expected frequencies based on the control sample of 127 students whose parents were living together, each of the four dichotomies of parental loss was further tested for associations with major field of concentration, achievement in individual or group athletic pursuits among male graduates, frequency of visits to student health service with somatic complaints, and history of known psychological or psychiatric consultation. All the appropriate χ^2 computations failed to reveal any statistically significant associations.

Psychological and psychiatric consultations were usually initiated by students or faculty members, independently of visits by students to the Student Health Service on account of somatic complaints. However, Table 3 indicates very significant associations for both sexes, between a history of psychological or psychiatric consultation and frequent visits to the Student Health Service with somatic complaints, excluding visits for routine immunizations and desensitization to allergens. This observation supports findings by Matarazzo et al [20] to the effect that the number of medical symptoms may be a good predictor of psychiatric symptomatology and vice versa. However, neither of these items (emotional problems nor somatic complaints) showed any statistical association with academic performance as measured by graduation status.

Table 4 shows correlation coefficients obtained between final grade index (cumulative grade point average, regardless of graduation status) and various indices that may be predictive of academic performance, according to the type of parental loss and sex of the student. The best predictor of final grade point average is clearly the Carleton College T-index developed by Wolf,[28] for which the correlations approach the figure of +0.65 obtained in the original sample of students for whom regression equations were computed. At first sight it may seem surprising that there were no significant correlations between final grade index and father's socioeconomic status or mother's education, but this may be partly attributable to relative homogeneity of the student population with respect to these variables. Hollingshead's two-factor index of social position has a range of scores from 11 to 77, but for all three groups of women students, the mean index of social position score

TABLE 5.—*Frequency of CEEB Verbal Aptitude Scores Higher Than Math Scores Among Male Students, According to Categories of Childhood Parental Loss*

Category of Childhood Parental Loss	CEEB Aptitude Scores: Verbal Higher Than Math	CEEB Aptitude Scores: Math Higher Than Verbal	χ^2 With 1 Df
No loss (control students)	14	56	—
Type of parental loss			
By death	16	34	1.65
By divorce	9	11	3.88 *
Sex of parent lost			
Father only	16	33	1.82
Mother or both	9	12	3.34
Age at loss of parent			
Under 10 yr	15	20	5.01 *
10 yr and over	10	25	0.55
Whether remaining parent remarried			
Yes	13	16	5.18 *
No	12	29	0.78

* $P < 0.05$.

TABLE 6.—*Ordinal Position in Relation to Loss of a Parent by Death or Divorce*

Ordinal Position	No. Among Nondeprived Controls	No. Among Students Reporting Loss of Parent by Death: Observed	No. Among Students Reporting Loss of Parent by Death: Expected	No. Among Students Reporting Parents Divorced: Observed	No. Among Students Reporting Parents Divorced: Expected
Only child	15	17	10.16	15	4.84
Eldest	69	35	46.72	18	22.28
Youngest	25	26	16.93	4	8.07
Other	18	8	12.19	4	5.81
All groups	127	86		41	
χ^2 with 3 df		13.85		24.74	
Probability	—	<0.01		<0.001	

varied only from 20.8 to 21.0. The mean for male students who had lost a parent by death was 22.6, and for male students in the sample whose parents were living together was 24.5, both well within the range of computed scores for social class II, which Hollingshead gave as 18 to 27. The only group whose mean index of social position score fell outside the range for class II was that of male students whose parents had been divorced, but their score of 30.0 did not differ from the controls to a statistically significant degree. The male students whose parents were divorced also appear to show lower correlations than any other group between final grade index and various predictive indices, but the numbers of students in the groups are small and the differences are not statistically significant.

In view of previously reported findings regarding differential verbal and math scores on the Scholastic Aptitude Test, Table 4 includes correlations between final grade index and verbal *minus* math scores (transformed for computing so that all figures would be positive and permit correlation). No significant association was found between differential verbal and math scores on the one hand, and subsequent academic performance on the other, in relation to type of parental loss or sex of student. Other tests failed to reveal any significant association between reversal of the usual sex-specific Scholastic Aptitude Test scores and a positive history of psychological or psychiatric consultation. However, Table 5 shows several significant relationships between reversal of the usual pattern among *male* students, and certain categories of childhood parental loss. In contrast with previous findings, this reversal among male students is *not* specifically associated with loss of the father, but with loss of either parent by divorce; and even more strongly with loss of either parent before the age of 10 years, and with subsequent remarriage of the remaining parent.

Possible interactions between these significant antecedent variables were explored further, and the most significant preponderance of reversed SAT scores among *male* students was found for the group that had lost a parent by divorce prior to the age of 10 years. Out of 13 such male students, seven had verbal scores higher than math scores (χ^2 4.95, with 1 df, and $P<0.05$). These 13 students who had lost a parent by divorce prior to the age of 10 years included 11 who had lost their father in this manner (five of whom showed SAT score reversals); and two who had lost their mother but remained with father (*both* of whom showed SAT score reversals). On the other hand, out of 16 male students who had lost their father by death prior to age 10 years, only six showed this pattern of reversal (χ^2 1.36, not significant). Out of seven male students who had lost a parent by divorce and acquired a step-parent by remarriage, four showed reversal of SAT scores (χ^2 3.05, and $P<0.10$). Out of 17 male students who had lost a parent prior to age 10 years and acquired a step-parent by remarriage, seven showed a reversal of SAT scores (χ^2 2.29, not significant).

Among *female* students, no significant association was found between reversal of SAT scores (ie, math scores higher than verbal) and any category of childhood parental loss. The overall findings for both sexes, but particularly those relating to male students, appear more consistent with the tension-interference hypothesis of Nelsen and Maccoby, than with the sex-typing hypothesis of Carlsmith and Funkenstein. However, an equally valid interpretation would be that male students with relatively low math aptitude scores are those who have failed to study this subject effectively in high school, regardless of possible interference from tension or absence from tension. In general terms, the latter might represent one form of underachievement, related to absence of appropriate parental controls as well as absence of an effective identification model of the same sex.[9] Of the seven male students with reversal of SAT scores, who had lost a parent by divorce prior to the age of 10 years, four failed to graduate, (expected number two), but this finding is not significant, and there was no overall association between SAT score reversals and graduation status for either sex.

One further finding of some interest is shown in Table 6. Many previous studies have attempted to demonstrate associations between ordinal position and personality characteristics or frequency of various forms of psychopathology. In the present study, it was found that the *control* sample of 127 students (still living together with both parents) contained significantly more eldest than youngest born

students of both sexes, suggesting that the eldest born members of some families may be provided with more opportunities for higher education than younger members, and conceivably may be under more pressure to achieve. The distribution of ordinal positions among the control sample was used to compute expected frequencies of each ordinal position among the students who had lost a parent by death and those who had lost a parent by divorce. It may be seen that there was a significantly higher frequency of youngest children among those who had lost a parent by death, and a marked excess of only children among those whose parents had been divorced. No significant association was established between ordinal position and frequency of psychological or psychiatric consultation, among any of these three groups of students. However, these findings may be considered relevant to future studies attempting to relate ordinal position to personality or psychopathology.

It may be added that some of the negative findings in the present study may be attributable to the relatively small numbers in the samples, the relatively short period of follow-up possible, the somewhat unsatisfactory definition of psychopathology, and the incompleteness of data available on some students—particularly those who left college prematurely. However, it is also likely that loss of a parent during childhood will have more obvious and significant consequences among subjects of lower intelligence, socioeconomic status, and previous school achievement than among members of this highly selected college population.

Summary

Previous studies of college students who had lost a parent during childhood by death, divorce, or prolonged separation, have focused attention on possible associations with subsequent psychopathology, academic achievement, and differential patterns of aptitude test scores.

Retrospective data on 162 Carleton College students seen by me for psychiatric evaluation, suggested that they had experienced a much higher frequency of parental loss by divorce and a somewhat higher frequency of parental loss by death during childhood, than had the total population of students admitted to the college.

Examination of family data contained in health records, submitted prior to admission by all 1,696 students admitted to the college as freshmen during the five-year period 1956-1960, resulted in the identification of 127 students who had reported the previous loss of one or both parents. A further sample was obtained, consisting of 127 control subjects whose parents were still living together, matched with the first sample by sex and by admission to the college as freshmen during the same period of time.

Anterospective data on the college careers of all 254 students, together with certain predictive indices of their performance, were obtained from the records of the Student Health Service, the Deans of Men and Women, the Placement Service, the Director of Admissions, the Registrar, the former college counselor, and the college psychiatrist. Each of the samples was found to be representative of the total population of students admitted as freshmen, according to sex, year of admission, and numbers who subsequently graduated with or without distinction.

Out of four male and three female students who graduated summa cum laude, two of the male students had previously reported the loss of a parent by death. This combination of rare events is unlikely to have occurred by chance, and suggests that factors associated with bereavement may lead some students to strive for exceptional achievement.

Students of each sex who had lost a parent during childhood were dichotomized according to (1) type of parental loss, (2) sex of parent lost, (3) age at loss of parent, and (4) whether the remaining parent remarried. No significant relationship was found to exist between any of these categories and graduation status, major field of concentration, athletic achievement among male graduates, frequency of visits to the Student Health Service with somatic complaints, or a history of known psychological or psychiatric consultation.

Psychological and psychiatric consultation were usually initiated independently of visits to the Student Health Service, but there was a highly significant association between the use of these independent facilities by both male and female students. Nearly all students with a history of known psychological or psychiatric consultation had also attended the Student Health

Service with somatic complaints more than five times per year. However, there was no significant relationship between the use of either of these facilities and academic performance.

The final grade index (cumulative grade point average, independent of graduation status) was positively correlated with predictive indices based on CEEB scholastic aptitude tests (verbal only, math only or both combined) and previous performance in high school, but *not* with father's socioeconomic status or mother's educational level. No significant differences in these correlations were evident between those students of each sex who had lost a parent and the control subjects whose parents were living together.

SAT verbal scores higher than math scores were found unduly frequently among *male* students whose parents had been divorced, who had lost either parent before the age of 10 years, and whose remaining parent later remarried. The only significant interaction between these antecedent variables involved loss of either parent by divorce prior to the age of 10 years. SAT math scores higher than verbal scores were found no more frequently than expected among any category of *female* students who had lost a parent during childhood. These findings are more consistent with a hypothesis of interference with learned mathematical abilities (whether related to tension, or other factors associated with underachievement) than with a hypothesis relating SAT scores to sex-role identification. However, reversal of the usual sex-specific patterns in SAT scores was not significantly associated with either academic performance or an increased frequency of psychological or psychiatric consultations.

Eldest born children of both sexes were much more frequent than youngest children among the *control* students whose parents were living together. There was a relatively higher proportion of youngest born among those who had lost a parent by *death*, and a relatively higher proportion of only children among those who had lost a parent by *divorce*. There was no significant association between ordinal position and frequency of psychological or psychiatric consultation among any of the three groups.

Some of the negative findings of the present study may be attributable to the relatively small numbers in the samples, the relatively short period of follow-up possible, the somewhat unsatisfactory definition of psychopathology, and incompleteness of data available on some students—particularly those who left college prematurely. However, it is also probable that loss of a parent during childhood will have more obvious and significant consequences among subjects of lower intelligence, socioeconomic status, and previous school achievement, than among the members of this highly selected college population.

President John Nason and various faculty members of Carleton College made this study possible.

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