Journal of Affective Disorders, 10 (1986) 67–75
Elsevier

JAD 00353

A Two-Year Naturalistic Follow-up of Depressed Patients Treated with Cognitive Therapy, Pharmacotherapy and a Combination of Both

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(Received 1 August, 1985)
(Revised, received 15 November, 1985)
(Accepted 26 November, 1985)

Summary

Depressed patients who had responded to either cognitive therapy, pharmacotherapy or the 2 treatments combined, were followed up retrospectively over a period of 2 years. There were significantly more relapses at 6 months in the pharmacotherapy group compared to the combined treatment group and the 2 cognitive therapy groups together. The number of individuals who relapsed at some point over the 2 years was significantly higher in the pharmacotherapy group than in either of the cognitive therapy groups. When hospital patients were considered separately, significantly more patients in the pharmacotherapy group relapsed over the 2 years compared to the 2 cognitive therapy groups combined. Methodological problems of naturalistic follow-up studies are discussed and the prophylactic potential of cognitive therapy is discussed relative to continuation drug treatment.

Key words: *Cognitive therapy – Depression – Naturalistic follow-up – Pharmacotherapy*

Introduction

Several methodologically adequate outcome studies of the efficacy of cognitive therapy (CT) in depression have been published since the seminal paper by Rush et al. (1977). They have demonstrated that CT is an effective treatment for unipolar, non-psychotic out-patients satisfying diagnostic criteria for major or minor depression. The general finding is that CT is equally or more efficacious than standard antidepressant medication (inter alia, Blackburn et al. 1981; Murphy et al. 1984; Beck et al. 1985) or behavioural methods of treatment (inter alia, Shaw 1977; Wilson et al. 1983).

If cognitive therapy has been shown to be an effective short-term treatment for certain types of depression, 2 important questions have still to be

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answered. Firstly, the differential indication for CT or pharmacotherapy in depressed patients has not been established, though there is some indication that the presence of endogenous symptoms is not a negative predictor of response to CT (Blackburn et al. 1981; Kovacs et al. 1981). Secondly, the long-term or prophylactic effect of cognitive therapy has not been extensively examined. In view of the recurring nature of depressive illness (Boyd and Weissman 1982), any treatment which could be shown to reduce the frequency of recurrence, as well as treating the acute condition, would be a particularly useful adjunct to our therapeutic armamentarium. As cognitive therapy treats depression not only by modifying the negatively biased thought content but also by challenging some of the basic attitudes and assumptions which are considered to be depressogenic (Beck et al. 1979), it could be logically inferred that patients who successfully undergo cognitive therapy learn new skills which they can then apply in the future if low mood recurs. Thus, if the ability to inspect and correct the thoughts and attitudes which maintain depression becomes an established skill, this would have a prophylactic effect without the need for continued therapy, contrary to pharmacotherapy.

There is some indication to date that this prediction may be borne out. Kovacs et al. (1981) reported a one-year naturalistic follow-up of the Rush et al. (1977) patients who received either CT or imipramine. They found that patients who had received CT had substantially lower levels of self-rated depression (Beck Depression Inventory, BDI, Beck et al. 1961) a year later than patients who had been treated with medication. The drug group tended to show more psychopathology over the year and relapsed roughly twice as often as the CT group. Murphy et al. (1984) reported that treatment gains in all their treatment groups (CT, nortriptyline, CT + nortriptyline, CT + placebo) were maintained at one month and Beck et al. (1985) reported that patients receiving CT alone, and CT combined with amitriptyline maintained their improvement equally at 6 and 12 months after treatment.

The aim of the study reported here was to address the question of the prophylactic effect of CT in a long-term naturalistic follow-up of 2 years of those patients who had responded to cognitive therapy alone or pharmacotherapy alone or to the combination of cognitive therapy and pharmacotherapy (Blackburn et al. 1981; Blackburn and Bishop 1983a).

Method

(a) Methodological considerations

Follow-up studies in psychiatry are notoriously difficult to conduct even with abundant resources (for example, the MRC multicentre trial of the prophylactic use of lithium and amitriptyline in unipolar depression has been severely criticised; Freeman 1984). Many methodological problems present themselves.

(1) Patients, once recovered, often want to sever all links with the hospital and a sizeable proportion of the samples may be untraceable because of mobility.

(2) The definition of 'relapse' presents certain conceptual difficulties. Klerman (1978) suggested that the term relapse should be reserved for a return of symptoms within 6–9 months after the onset of the index episode and that recurrence should apply to a return of symptoms after that period. Thus, relapse would apply to the previous episode and recurrence to a new episode of illness.

(3) Though such a clear, if arbitrary, definition should facilitate interpretation of follow-up studies, it does leave the meaning of 'return of symptoms' open. Studies which rely on face-to-face interviews at regular intervals may use different criteria of recurrence, for example the return of a full-blown major depression or cut-off scores on a self-rating and/or observer-rating scale of depression. On the other hand, most follow-up studies are naturalistic and rely on re-referrals and reinstitution of treatment. The former method may overestimate recurrence, especially if rating scales are used (type 1 error), whereas the latter method may underestimate recurrence (type 2 error), but has the advantage of being non-interventionist, thus reflecting usual medical practice and patient behaviour.

(4) The length and dosage of maintenance medication are also not easy to control and may confound the interpretation of results.

The study reported here opted for a naturalistic

design, as the main aim was to compare the long-term benefits of the usual treatment which depressed patients receive from their general practitioners and hospital psychiatrists with CT alone and treatment as usual combined with CT. No constraints had been put on which antidepressants were prescribed during the treatment phase. Similarly, in the follow-up period, physicians were allowed to follow their normal practice with regard to prescribing with the only proviso that maintenance medication should continue for at least 6 months. Klerman's (1978) definition of the terms relapse and recurrence was also adopted.

(b) Summary of previous study

Patients from hospital out-patient clinics and from a general practice were screened using a standard psychiatric interview (Present State Examination, PSE, Wing et al. 1974, and Research Diagnostic Criteria, Spitzer et al. 1978). Only patients satisfying the criteria for primary major depressive disorder, unipolar and non-psychotic sub-type, with scores on the BDI ≥ 14, were accepted into the study. Of the 71 hospital and 69 general practice patients who were referred, 49 hospital and 39 general practice patients satisfied criteria for entrance into the study. These patients were randomly allocated to one of 3 modes of treatment: CT, drug of choice at recognised therapeutic levels (most commonly, amitriptyline or clomipramine at 150 mg daily) or a combination of CT and pharmacotherapy. Sixty-four patients (40 hospital and 24 general practice) completed treatment. The 2 groups of patients did not differ in sex and age distribution, nor in severity of depression (as assessed by the Hamilton Rating Scale for Depression, Hamilton 1960 and BDI), but the hospital patients were more highly educated and were of higher socio-economic level ($P < 0.001$), had a longer duration of the index episode ($P < 0.02$), had suffered more previous episodes of illness ($P < 0.02$) and had a higher score in psychopathology as assessed by the PSE total score ($P < 0.05$). The 2 groups of patients did not differ in the proportion of endogenous and non-endogenous patients assessed according to Spitzer et al. (1978) criteria.

At the end of treatment which lasted 12–15 weeks on average, outcome was assessed on a series of dependent variables by two-way analyses of co-variance of percentage change scores (covariates used were: duration of illness, socio-economic level, education level and PSE total) with treatment effect and location of treatment as the 2 factors. The results indicated a significant treatment effect on the BDI, HRSD, anxiety level (as measured by the Irritability, Depression and Anxiety Scale; Snaith et al. 1978) and on 3 cognitive variables, view of self, view of the environment and view of the future (as measured by Semantic Differential Scales; Osgood et al. 1959). In the hospital patients, the pattern of response indicated that the combined treatment was superior to CT or pharmacotherapy alone while in the general practice patients, the combined treatment was equivalent to CT alone, both being superior to pharmacotherapy alone.

Defining response at the end of treatment as a score of 8 or less on the BDI and/or 9 or less on the HRSD (Blackburn and Bishop 1983b), the following pattern was obtained: in the hospital group, the number of responders in each treatment group was 11 out of 13 in the combined treatment group, 9 out of 14 in the CT group and 11 out of 13 in the pharmacotherapy group. In the general practice group, the corresponding numbers were 8 out of 9 in the combined treatment group, 8 out of 8 in the CT group and 1 out of 7 in the pharmacotherapy group. The proportion of responders in the 3 treatment groups did not differ significantly in the hospital patients, but in the general practice patients, the drug group did significantly worse ($\chi^2 = 15.8$, $P < 0.01$).

(c) Subjects

As the focus was on the evaluation of the long-term benefits of different treatments for depression, only those patients who had responded in the different treatment groups were followed up. The inclusion of non-responders would have been appropriate only for investigating the relationship between the natural history of depression and therapeutic intervention instead of the more specific issue of the effectiveness of different treatments and relapse/recurrence.

Table 1 describes the patients who were included in the study. Of the 11 responders to combined treatment in the hospital group, 2 were

TABLE 1

DESCRIPTION OF PATIENTS FOLLOWED UP AFTER TREATMENT

n (HOP/GPP) [a]	Combined treatment (CT and pharmacotherapy) 16 (9/7)	Cognitive therapy (CT) 15 (8/7)	Pharmacotherapy 10 (9/1)	*P*
Mean age (SD)	44.1 (10.6)	39.2 (12.2)	47.9 (10.0)	NS
Sex				
– male	5	3	1	NS
– female	11	12	9	NS
Mean duration of index episode of illness (range in weeks)	58.7 (72.1) (4–260)	61.3 (72.4) (3–260)	43.6 (48.9) (4–135)	NS
Mean number past episodes of depression (range)	1.7 (3.0) (0–12)	1.7 (1.6) (0–5)	2.9 (3.5) (0–12)	NS
Mean number previous hospital referrals (range)	1.7 (2.4) (0–8)	1.0 (1.5) (0–5)	2.5 (3.7) (0–12)	NS
Mean number previous admissions	1.4 (2.8)	0.6 (1.3)	0.3 (0.7)	NS
Mean basal HRSD	20.2 (5.0)	16.3 (3.8)	16.6 (4.9)	< 0.05
Mean basal BDI	23.8 (7.0)	23.5 (3.7)	24.0 (5.1)	NS

[a] HOP = hospital out-patient; GPP = general practice patient.

lost to follow-up, of whom one refused to attend follow-up appointments and one left the area; of the 8 responders to combined treatment in the general practice, one was lost to follow-up because he also left the area. Of the 9 responders to CT in the hospital group, one was lost to follow-up because of refusal to attend, and of the 8 responders to CT in general practice, one was also lost to follow-up because of similar reasons. In the hospital drug group, 2 were lost to follow-up because they wanted to have cognitive therapy after the end of the treatment trial.

Comparison between the patients from the 2 sources of referral showed no significant difference between the CT groups in age ($t = 0.58$, $df = 13$), in duration of index episode of illness ($t = 0.32$, $df = 13$), in number of previous episodes of illness ($t = 1.89$, $df = 13$), in number of previous hospital referrals ($t = 2.06$, $df = 13$, $0.1 < P > 0.05$) or in number of previous admissions ($t = 1.85$, $df = 13$). However, in the combined treatment group, hospital out-patients were significantly older than their general practice counterparts ($t = 2.65$, $df = 14$, $P < 0.02$), had a longer duration of illness ($t = 2.36$, $df = 14$, $P < 0.05$) and had had more previous hospital referrals ($t = 2.59$, $df = 14$, $P < 0.05$). There were no significant differences in baseline severity of depression as measured by the HRSD and the BDI between the 2 CT groups ($t = 0.31$ and 0.17, $df = 13$) or the 2 combined treatment groups ($t = 0.16$ and 1.52, $df = 14$). As only one responder to pharmacotherapy came from the general practice, no comparisons were made with the hospital sub-group.

Since the hospital and general practice patients were homogenous on diagnostic criteria and severity of illness (though there were definite differences in previous history between the combined treatment groups and only a trend for differences between the CT groups), it was considered acceptable to analyse the follow-up data from the 2 sources of referral together, that is 16 responders to combined treatment, 15 to CT and 10 to pharmacotherapy. Table 1 shows that there were no significant differences among treatment groups, except on the HRSD where the combined treatment group was more severely depressed than the CT group ($t = 2.45$, $df = 29$, $P < 0.5$). However, as the hospital out-patients had a different pattern of response in the outcome study and the numbers in

the 3 hospital treatment groups are roughly comparable, the results of the hospital groups were also analysed separately.

(d) Procedures

All patients were given 6-weekly appointments for 6 months. Patients who had responded to pharmacotherapy were maintained on the same drug for at least 6 months, although sometimes at a reduced dose. One patient in this group had to discontinue medication because of a concomitant physical illness which contraindicated the use of antidepressant medication. Similarly, patients in the combined treatment group were maintained on drugs for at least 6 months and in addition had 'booster sessions' of CT every 6 weeks. Patients in the CT group received only 'booster sessions' every 6 weeks for 6 months as an equivalent to maintenance pharmacotherapy. So, the initial 6 months of follow-up were in fact a period of mandatory maintenance treatment. The remaining period of follow-up was naturalistic, in that patients were free to seek alternative treatment and physicians in charge were free to follow their normal practice. This was done as the main point of interest was the prophylactic effect of CT compared with treatment as usual and not CT with maintenance pharmacotherapy.

At 6 months, subjects completed the BDI and the Hopelessness Scale, HS (Beck et al. 1974) and were rated by an independent rater on the HRSD. The raters for all patients were hospital physicians. These physicians had been involved in prescribing medication to the hospital patients, but had not been involved in the management of the general practice patients nor in cognitive therapy.

Follow-up data for a further period of 18 months, as well as for the first 6-month period, were based on an examination of case-notes for hospital out-patients and of general practitioners' attendance records and prescription cards for general practice patients. At 6 months, relapse was defined as scores greater than 9 on the BDI and greater than 8 on the HRSD and at 12, 18 and 24 months, recurrence of depression was defined by physicians' notes indicating the presence of depressive symptoms necessitating further prescription of antidepressant medication, re-entry into psychotherapy and/or admission to hospital (the prescription of benzodiazepine was discounted).

Analysis

Rating scales at 6 months were analysed by one-way analyses of variance and at 6, 12, 18 and 24 months, the proportion of patients relapsed and remaining well, as defined above, was analysed by chi-squared or Fisher's exact probability tests.

Results

Ratings were available at 6 months on most of the patients on the HRSD, BDI and HS. Table 2 shows the means and standard deviations on these measures for the 3 treatment groups.

One-way analyses of variance indicated that there was no significant difference among treatments at 6 months on any of the ratings, mean scores for all groups being well within normal limits.

However, as shown in Table 3, Fisher's exact probability tests of the frequency of patients who had remained well at 6 months compared to those who had relapsed (BDI ≥ 9 and HRSD ≥ 8) on the 3 treatments showed a significant difference ($P = 0.05$) between the combination treatment group and the pharmacotherapy group. There was no significant difference between CT and pharmacotherapy, but when the 2 groups who had received CT were collapsed, there was a significant

TABLE 2

MEANS (STANDARD DEVIATIONS) FOR HRSD, BDI AND HS FOR 3 TREATMENT GROUPS AT 6 MONTHS FOLLOW-UP

	HRSD [a]	BDI [b]	HS [c]
Cognitive therapy	4.6 (4.9) n = 13	5.7 (5.2) n = 14	7.2 (6.3) n = 11
Pharmacotherapy	2.7 (2.9) n = 6	5.5 (6.3) n = 6	7.8 (5.4) n = 8
Combination	4.4 (3.4) n = 10	7.6 (5.1) n = 9	5.3 (3.7) n = 8
F (df)	0.5 (2,25)	0.4 (2,26)	0.4 (2,21)

[a] Hamilton Rating Scale for Depression.
[b] Beck Depression Inventory.
[c] Hopelessness Scale.

TABLE 3

CLINICAL STATUS OF PATIENTS AT 6-MONTHLY INTERVALS OVER FOLLOW-UP PERIOD OF 2 YEARS

	6 months		12 months		18 months		24 months	
	Well	Depressed (%)	Well	Depressed (%)	Well	Depressed (%)	Well	Depressed (%)
Cognitive therapy	14	1 (6)	12	1 (8)	12	1 (8)	12	1 (8)
Pharmacotherapy	7	3 (30)	6	3 (33)	5	4 (44)	5	4 (44)
Combination	16	0 (0)	12	4 (25)	14	1 (7)	12	2 (14)
Fisher's exact probability test	2 vs. 3, $P = 0.05$ 1 + 3 vs. 2, $P = 0.04$		NS		NS		NS	

difference ($P = 0.04$) from pharmacotherapy alone. The frequencies indicate that proportionately more patients on drug maintenance therapy had relapsed compared to the other 2 treatment groups: 3 out of 10 (30%) as compared to one out of 15 (6%) in the CT group and none of the 16 in the combined treatment group.

At 12 months, one patient in the CT group had a recurrence of illness, 12 remained well and 2 were lost to follow-up (both moved from the area); in the pharmacotherapy group, 3 patients were depressed (one of whom was admitted to hospital and treated with ECT), 6 remained well and one left the area; in the combined treatment group, 4 patients (25%) were depressed (one of whom became manic on phenelzine) and 12 remained well. These frequencies were not significantly different.

At 18 months, in the CT group, one patient had become depressed again and 12 remained well; in the pharmacotherapy group, 4 patients (44%) had become depressed, and 5 remained well, while in the combined treatment group, one had a recurrence of depression (7%), 14 remained well and one had emigrated. Proportionately, more patients in the pharmacotherapy group had a recurrence of depression compared to the other 2 groups, but the difference was not significant.

At 24 months, in the CT group, one patient (8%) had a recurrence of depression and 12 were well; in the pharmacotherapy group, 4 (44%) were depressed and 5 remained well, while in the combined group, 2 (14%) were depressed and 12 remained well. These frequencies were not significantly different, the trend indicating that more patients in the pharmacotherapy group had a recurrence of depression at this time.

It was evident from the data that the same individuals had been depressed at more than one point during the 2-year follow-up. Given that this was the case, rather than counting each episode separately, an analysis was done counting the number of individuals who had been depressed according to the criteria described above at any time over the 24 months in each treatment group. Table 4 shows the number of individuals who remained well throughout the period of follow-up and the number of individuals who became depressed at some time.

A chi-squared test revealed a significant difference within the 3 treatment groups ($\chi^2 = 8.93$, $df = 2$, $P < 0.02$). Of the patients in the CT group who were followed up for the whole period, 10 remained well and 3 had been depressed at some time over 2 years, giving a 23% relapse/recurrence rate; 2 patients in the pharmacotherapy group remained well and 7 had been depressed over the same period, giving a 78% relapse/recurrence rate; and 11 patients in the combined treatment group remained well, while 3 had become depressed, giving a relapse/recurrence rate of 21%. One of the patients in this group who had had a recurrence at 12 months had emigrated before the end of the follow-up period. Further analysis (Fisher's exact probability test) revealed that more individuals had become depressed again in the pharmacotherapy group over time compared to both CT

TABLE 4

CLINICAL COURSE OF TOTAL SAMPLES (AND OF HOSPITAL OUT-PATIENTS SEPARATELY) OVER FOLLOW-UP PERIOD OF 2 YEARS

Treatment group	Well	Depressed	Relapse/ recurrence (%)
Cognitive therapy	10 (5)	3 (1)	23% (17%)
Pharmacotherapy	2 (2)	7 (6)	78% (75%)
Combination	11 (6)	3 (2)	21% (33%)

$\chi^2 = 8.93$, $df = 2$, $P < 0.02$. Figures in brackets relate to hospital out-patients only.

groups ($P < 0.05$). There was no difference between the CT and combined treatment groups.

Analysis of hospital patients' status separately showed similar patterns: of the 6 CT patients with complete data, one became depressed over the 24 months and 5 remained well (17% recurrence); of the 8 pharmacotherapy patients, 2 remained well (75% recurrence) and of the 8 combined treatment patients, 6 remained well (33% recurrence). Fisher's exact probability tests indicated no significant differences in recurrence between any pair of the 3 treatment groups, but the 2 cognitive therapy groups combined suffered significantly less recurrences than the pharmacotherapy group ($P = 0.05$).

Discussion

The results of this 2-year follow-up of recovered depressed patients showed a clear advantage in favour of the prophylactic effect of cognitive therapy. At 6 months follow-up, patients who had been treated with antidepressant medication alone, CT alone or a combination of the two, did not differ in mean scores on self-rated and observer-rated depression and on degree of hopelessness, these being all within normal limits. While most patients had maintained their improvement (37 out of 41, 90%), 30% of patients had relapsed in the drug group, 6% in the CT group and none in the combined group, indicating significantly more relapse in the drug group at this point, compared to the combined treatment group or to patients who had received cognitive therapy with or without medication. This pattern was consistent throughout the 2 years, though only a trend was obtained at 12, 18 and 24 months.

Since the same patient could be symptomatic at several points of follow-up, relapse or recurrence was also calculated by the number of individuals who became depressed at any point during the 2 years. Of the 13 patients in the CT group who were followed up throughout the 2-year period, 3 (23%) had recurrence of symptoms; 2 of these patients, both general practice patients, had suffered 2 depressive episodes before the index episode. In the drug group, 7 out of 9 (78%) suffered further episodes of depression, one of whom had suffered 12 previous episodes of depression, the majority having suffered only one or 2 previous episodes. In the combined treatment group, 3 out of 14 (21%) had a recurrence of depression, all of whom had experienced one or 2 previous episodes of depression and one of whom developed a manic episode during the period of follow-up. Thus, significantly more patients in the drug group had become depressed again over the 2 years though only one of them had outstandingly more morbidity in her previous history.

It was considered relevant to analyse the clinical course of the hospital patients separately, in spite of the reduction of the size of the samples, because at outcome there had been no significant differences between pharmacotherapy alone and cognitive therapy alone in that group. This analysis also showed more recurrence of illness in the patients who had received pharmacotherapy alone compared to the 2 combined groups who had received cognitive therapy, with or without pharmacotherapy.

The morbidity rate in the drug group compares well with previous studies of long-term outcome in similar populations on continuation medication or placebo. Mindham et al. (1973) reported that 59% of patients on placebo and 22% on antidepressant medication had relapsed at 6 months. Glen et al. (1984) in the MRC trial of maintenance medication in depression, reported a relapse rate on placebo (9 patients) of 56%, 67%, 78% and 78% at 6, 12, 18 and 24 months. The corresponding relapse rates for amitriptyline or lithium were consecutively 34%, 45%, 53% and 59%. Prien et al. (1973) reported similar relapse rates in their lithium and imipramine groups and a 92% relapse rate in

their placebo group in a 2-year follow-up. The patients in the MRC trial and in Prien's et al. study were on continuation medication for 3 years and 2 years consecutively. The drug group in this study was maintained on medication for 6 months and the relapse rate at that point is somewhat better than that reported by Glen et al. (1984) for the same period and slightly higher than that reported by Mindham et al. (1973), while, as would be expected, the percentage of individuals in the drug group who had become depressed again at the end of 2 years (78%) is higher than that reported by Prien et al. (1973) and Glen et al. (1984). These authors were interested in the effect of maintenance on lithium or imipramine over 2 years, whereas this study did not control for drug maintenance after 6 months as the focus of interest was the long-term effect of cognitive therapy compared with the usual practice in drug maintenance.

The 2 CT groups followed up here suffered less recurrence of illness than the Glen et al. (1984) placebo and medication groups over the same period, indicating that cognitive therapy may offer long-term protection against depression. The superiority of CT over pharmacotherapy in this study is particularly impressive in view of the fact that the 3 groups did not differ significantly in the characteristics which have been positively associated with relapse rate. Previous studies have associated risk of relapse with number of previous episodes of illness (Paykel 1979; Zis et al. 1980) and length of index episode of illness has been considered a negative predictor of response (Paykel et al. 1973; Tyrer et al. 1980). In fact, the combined treatment group had been more severely depressed at baseline as rated by the HRSD. The findings of this study support Kovacs et al. (1981) who reported in a one-year follow-up a significant difference on the BDI and several trends in favour of CT in a comparison between CT and imipramine groups.

It must be pointed out, however, that although very promising, these findings are best considered as tentative as several of the methodological issues raised earlier were not resolved. Firstly, the groups were small, so that both type 1 (chance findings because of specific individuals in the groups) and type 2 errors (small numbers inhibiting positive effects to emerge) could have occurred. Secondly, if it had been feasible, it would have been preferable to monitor the patients at regular intervals in face-to-face interviews and to have included a measure of social adjustment and of life events during that period. The use of case-notes, taking into account hospital or general practice visits, the prescription of antidepressant medication and hospital admissions, would undoubtedly have led to the investigators missing milder episodes of depression during the follow-up period or even severe depressions in patients who were reluctant to return for treatment. On the other hand, the use of case-notes did effectively prevent any bias effect from the investigators, two of whom had administered cognitive therapy in the outcome study. The fact that the target population had, on the whole, not moved from the city and that psychiatric services are centralised enabled the study design to be relatively successful. The strict definition of recurrence, while excluding minor symptoms, had the advantage of being objective.

In spite of these limitations, it is felt that the results reported here offer tentative support for the prediction that CT is effective in reducing vulnerability to depression. The design of the study does not allow a clear understanding of the processes which may underlie this finding. Though it was proposed that the theoretical assumptions of CT would lead to the prediction of reduced vulnerability to depression, other processes may have operated. It is possible, for example, that the lower rates of recurrence in the 2 CT groups are due to a non-specific factor which caused patients who had received this treatment to be more reluctant to seek help in spite of a recurrence of symptoms. Another possibility is that patients treated with CT become as depressed as patients who have received antidepressant medication but do not seek further treatment due to having learnt effective coping strategies during CT, that is, these patients may treat themselves. The possibility that patients who have a recurrence of depressive symptoms do not seek help because of non-specific factors or no help is sought because no recurrence of depression has occurred could equally apply to other methods of treatment. The important possibility suggested by this study is that CT may offer an effective prophylaxis by teaching coping and problem solv-

ing skills which can be used to ameliorate incipient depressive symptoms. Further non-naturalistic follow-up studies using regular interviews should be able to investigate these factors.

Acknowledgements

The authors would like to thank the general practitioners, Drs. DeLorey, Bruce and Moffat, the consultant psychiatrists in the R.E.H. who referred patients and allowed access to case-notes and Norma Brearley for her patience in preparing the manuscript.

References

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J.E. and Erbaugh, J.K., An inventory for measuring depression, Arch. Gen. Psychiatry, 4 (1961) 561–571.

Beck, A.T., Weissman, A., Lester, D. and Trexler, L., The measurement of pessimism. The Hopelessness Scale, J. Consult. Clin. Psychol., 42 (1974) 861–865.

Beck, A.T., Rush, A.J., Shaw, B.F. and Emery, G., Cognitive Therapy of Depression: A Treatment Manual, Guilford Press, New York, 1979.

Beck, A.T., Hollon, S.D., Young, J.E., Bedrosian, R.C. and Budenz, D., Treatment of depression with cognitive therapy and amitriptyline, Arch. Gen. Psychiatry, 42 (1985) 142–148.

Blackburn, I.M. and Bishop, S., Changes in cognition with pharmacotherapy and cognitive therapy, Br. J. Psychiatry, 143 (1983a) 609–617.

Blackburn, I.M. and Bishop, S., Pattern of change in mood and cognition with cognitive therapy and pharmacotherapy. In: E. Karas (Ed.), Current Issues in Clinical Psychology, Plenum Press, New York and London, 1983b, pp. 185–205.

Blackburn, I.M., Bishop, S., Glen, A.I.M., Whalley, L.J. and Christie, J.E., The efficacy of cognitive therapy in depression: a treatment trial using cognitive therapy and pharmacotherapy, each alone and in combination, Br. J. Psychiatry, 139 (1981) 181–189.

Boyd, J.H. and Weissman, M.M., Epidemiology. In: E.S. Paykel (Ed.), Handbook of Affective Disorders, Guilford Press, New York, 1982, pp. 110–125.

Freeman, C.P., Prophylaxis against unipolar depression, Br. Med. J., 289 (1984) 512–514.

Glen, A.I.M., Johnson, A.L and Shepherd, M., Continuation therapy with lithium and amitriptyline in unipolar depressive illness: a randomised, double-blind, controlled trial, Psychol. Med., 14 (1984) 37–50.

Hamilton, M., A rating scale for depression, J. Neurol. Neurosurg. Psychiatry, 23 (1960) 56–61.

Klerman, G.L., Long-term maintenance of affective disorders. In: M.A. Lipton, A. Dimascio and K. Killam (Eds.), Psychopharmacology: A Generation of Progress, Raven Press, New York, 1978, pp. 1303–1311.

Kovacs, M., Rush, A.J., Beck, A.T. and Hollon, S.D., Depressed out-patients treated with cognitive therapy or pharmacotherapy. A one-year follow-up, Arch. Gen. Psychiatry, 38 (1981) 33–39.

Mindham, R.H.S., Howland, C. and Shepherd, M., An evaluation of continuation therapy with tricyclic antidepressants in depressive illness, Psychol. Med., 3 (1973) 5–17.

Murphy, G.E., Simons, A.D., Wetzel, R.D. and Lustman, P.J., Cognitive therapy and pharmacotherapy, singly and together in the treatment of depression, Arch. Gen. Psychiatry, 41 (1984) 33–41.

Osgood, C.E., Suci, G.J. and Tannenbaum, P.G., The Measurement of Meaning, Urbana, University of Illinois, 1959.

Paykel, E.S., Predictors of treatment response. In: E.S. Paykel and A. Coppen (Eds.), Psychopharmacology of Affective Disorders, Oxford University Press, Oxford, 1979, pp. 193–220.

Paykel, E.S., Pinsoff, B.A., Klerman, G.L., Haskell, D. and Di Mascio, A., Clinical response to amitriptyline among depressed women, J. Nerv. Ment. Dis., 156 (1973) 149–165.

Prien, R.F., Klett, J. and Caffey, E.M., Lithium carbonate and imipramine in prevention of affective episodes, Arch. Gen. Psychiatry, 29 (1973) 420–425.

Rush, A.J., Beck, A.T., Kovacs, M. and Hollon, S.D., Comparative efficacy of cognitive therapy versus pharmacotherapy in out-patient depression, Cog. Ther. Res., 1 (1977) 17–37.

Shaw, B.F., Comparison of cognitive therapy and behaviour therapy in the treatment of depression, J. Consult. Clin. Psychol., 45 (1977) 543–551.

Snaith, R.P., Constantopoulos, A.A., Jardine, M.Y. and McGuffin, P., A clinical scale for the self-assessment of irritability, Br. J. Psychiatry, 132 (1978) 164–171.

Spitzer, R.L., Endicott, V. and Robins, E., Research diagnostic criteria: rationale and reliability, Arch. Gen. Psychiatry, 36 (1978) 773–782.

Tyrer, P.J., Lee, I., Edwards, J.G., Steinberg, B., Elliott, E.J. and Nightingale, J.H., Prognostic factors determining response to antidepressant drugs in psychiatric out-patients and general practice, J. Affect. Disord., 2 (1980) 149–156.

Wilson, P.H., Goldin, J.C. and Charbouneau-Powis, M., Comparative efficacy of behavioural and cognitive treatments of depression, Cog. Ther. Res., 7 (1983) 111–124.

Wing, J.K., Cooper, J.E. and Sartorius, N., The Description and Classification of Psychiatric Symptoms: An Instruction Manual for the Present State Examination and CATEGO Programme, Cambridge University Press, London, 1974.

Zis, A.P., Grof, P., Webster, M. and Goodwin, F.K., Prediction of relapse in recurrent affective disorder, Psychopharmacol. Bull., 16 (1980) 47–49.