Cognitive Therapy and Research, Vol. 1, No. 1, 1977, pp. 17–37

Comparative Efficacy of Cognitive Therapy and Pharmacotherapy in the Treatment of Depressed Outpatients[1]

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Forty-one unipolar depressed outpatients were randomly assigned to individual treatment with either cognitive therapy (N = *19*) *or imipramine* (N = *22*). *As a group, the patients had been intermittently or chronically depressed with a mean period of 8.8 years since the onset of their first episode of depression, and 75% were suicidal. For the cognitive therapy patients, the treatment protocol specified a maximum of 20 interviews over a period of 12 weeks. The pharmacotherapy patients received up to 250 mg/day of imipramine for a maximum of 12 weeks. Patients who completed cognitive therapy averaged 10.90 weeks in treatment; those in pharmacotherapy averaged 10.86 weeks. Both treatment groups showed statistically significant decreases in depressive symptomatology. Cognitive therapy resulted in significantly greater improvement than did pharmacotherapy on both a self-administered measure of depression* (*Beck Depression Inventory*) *and clinical ratings* (*Hamilton Rating Scale for Depression and Raskin Scale*). *Moreover, 78.9% of the patients in cognitive therapy showed marked improvement or complete remission of symptoms as compared to 22.7% of the pharmacotherapy patients. In addition, both treatment groups showed substantial decrease in anxiety ratings. The dropout rate was significantly higher with pharmacotherapy* (*8* Ss) *than with cognitive therapy* (*1* S). *Even*

[1]This study and preparation of this paper were supported by the following: NIMH Grant MH-19989-06, a grant from the National Association of Mental Health, and NIMH Grant MH-27759-01.

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when these dropouts were excluded from data analysis, the cognitive therapy patients showed a significantly greater improvement than the pharmacotherapy patients. Follow-up contacts at three and six months indicate that treatment gains evident at termination were maintained over time. Moreover, while 68% of the pharmacotherapy group re-entered treatment for depression, only 16% of the psychotherapy patients did so.

Cognitive therapy encompasses a set of treatment techniques based on a specific theoretical approach to psychopathology. This theoretical approach to the emotional disorders such as depression is based on the assumption that "the affective response is determined by the way an individual structures his experience" (Beck, 1963). The various symptomatic manifestations of depression (e.g., sleep changes, hopelessness, sadness, suicidal wishes) are regarded as concomitants of a shift in the cognitive organization of the depressed patient. As a result of the emergence of certain maladaptive cognitive schemas, the depressed patient tends to regard himself, his world, and his future in a negative way. This negative "cognitive triad" is evident in the way the depressed patient systematically miscontrues his experiences and in the idiosyncratic content of his ideation. Specifically, the theme of loss in terms of personal attributes, expectations, and interpersonal relations permeates the thought content of the depressed patient. The structure of this distorted thinking reflects various conceptual and logical errors such as arbitrary inference, overgeneralization, and magnification.

The cognitive view of psychopathology has been reflected in the writings of other authors such as Adler (1927), Arnold (1960), Ellis (1962), Horney (1950), Kelly (1955), A. Lazarus (1972), and R. Lazarus (1966). The specific application of this paradigm to depression has been extensively described by Beck (1963, 1964, 1967, 1976).

The rationale for the cognitive therapy of depression is derived from this cognitive formulation: If the source of the depression is a hypervalent set of negative concepts, then the correction and damping down of these concepts may be expected to alleviate the depressive symptomatology. In cognitive therapy the therapist and patient work together to identify the patient's distorted cognitions, which are derived from his dysfunctional beliefs. These cognitions and beliefs are subjected to logical analysis and empirical testing. In addition, through the assignment of behavioral tasks, the patient learns to master problems and situations which he previously considered insuperable, and consequently, he learns to realign his thinking with reality.

The cognitive therapist employs both verbal and behavioral techniques to help the patient learn to: (a) recognize the connections between cognition, affect, and behavior, (b) monitor his negative thoughts, (c)

examine the evidence for and against his distorted cognitions, and (d) substitute more reality-oriented interpretations for his distorted negative cognitions. Finally, the patient learns to identify and alter the dysfunctional beliefs which predispose him to distort and negatively evaluate his experiences. Homework assignments between treatment sessions not only maintain the patient's active participation but also provide an opportunity in his daily life to utilize the techniques learned in treatment (see Beck, 1976, pp. 263-305).

The empirical basis for the application of cognitive theory to the psychotherapy of depression has been detailed by Beck (1976), and Beck and Shaw (1977). They review a number of correlational studies which showed that the preponderance of negative thinking is reflected in the dreams, projective test responses, self-concepts, and attitudes toward the future of depressed patients. Investigations involving experimental manipulation of relevant cognitive variables showed a predictable effect on other manifestations of depression such as mood, motivation, level of aspiration, performance, and pessimism. Furthermore, several analogue studies based on the cognitive model demonstrated the ameliorative effects of success and the detrimental effects of failure on depressive symptomatology. The finding that depressed patients react positively to tangible evidence of successful performance contributed substantially to the development of verbal and behavioral techniques for the treatment of depression (Beck, 1976, pp. 124-128).

Since previous clinical experience indicated that short-term cognitive therapy was effective in the treatment of depression (Beck, 1963, 1964), we designed a study to assess the efficacy of cognitive therapy compared to a generally accepted standard treatment, tricyclic pharmacotherapy. Tricyclic antidepressants have been found to be superior to both placebo (see Morris and Beck, 1974, for a review of the literature) and various forms of psychological intervention (Covi, Lipman, Derogatis, Smith, & Pattison, 1974; Friedman, 1975; Klerman, DiMascio, Weissman, Prusoff, & Paykel, 1974). Specifically, compared to tricyclic pharmacotherapy, marital therapy (Friedman, 1975), social work counseling (Klerman et al., 1974), and supportive group therapy (Covi et al., 1974) showed little success in reducing and alleviating depressive symptomatology in psychiatric outpatients. By choosing the best available treatment for the acute symptoms of depression as a standard for comparison, we could readily test the practical utility of cognitive therapy in the treatment of depressed patients. Furthermore, we could be relatively confident that cognitive therapy is superior to placebo if it were found to be equivalent or superior to pharmacotherapy.

Controlled studies of cognitive therapy with depressed outpatients indicated that it was more effective than either behavior therapy or nondirective therapy (Shaw, in press), or insight-oriented therapy (Morris, Note 1).

Using a single subject design, Schmickley (Note 2) demonstrated significant effects with depressed clinic patients. Similarly, controlled studies with depressed student volunteers revealed significant effects with cognitive therapy (Taylor & Marshall, in press; Gioe, Note 3). With the background of systematic studies showing the superiority of cognitive therapy over other psychological therapies or waiting list control, the need to assess its efficacy in comparison to a proven antidepressant agent in the treatment of more severely depressed patients is apparent.

METHOD

Subjects

The sample consisted of 15 males and 26 females between the ages of 18 and 65 who sought psychiatric treatment for their depression. The patients contacted our clinic at the Hospital of the University of Pennsylvania on their own initiative or were referred by health professionals. Table I presents the demographic characteristics of the sample.

Most of the patients had multiple prior depressive episodes, and 12.2% had a history of previous suicide attempt(s). The majority had had previous psychotherapeutic and/or antidepressant drug treatment and 22% of the sample had previous psychiatric hospitalization(s). At the time of their entry into the study, 39% of the sample had been depressed for more than 1 year and slightly more than 75% of the group reported suicidal ideation (see Table II). The mean period of time since the onset of the first

Table I. Demographic Characteristics of Patients Assigned to Treatment

Variable	Cognitive therapy (N = 19)	Pharmacotherapy (N = 22)	Full sample (N = 41)
Sex			
Male	6	9	15
Female	13	13	26
Race			
White	18	21	39
Nonwhite	1	1	2
Mean age in years	33.90	37.33	35.70
Mean years of education	14.63	13.81	14.20
Employment			
Employed	12	11	23
Not employed	7	11	18
Marital status			
Single	4	4	8
Married	10	15	25
Separated, divorced, widowed	5	3	8

Table II. History of Illness Characteristics of Patients Assigned to Treatment

Variable	Cognitive therapy ($N = 19$)	Pharmacotherapy ($N = 22$)	Full sample ($N = 41$)
Median number of previous depressive episodes	3.0	2.5	2.9
Duration of current depressive episode			
1 year or less	13	12	25
More than 1 year	6	10	16
Median years since first episode	8.08	9.29	8.77
Median number of previous therapists	2.00	2.20	2.08
Patients with previous psychiatric hospitalization	4	5	9
Patients with previous tricyclic treatment	7	4	11
Patients reporting suicidal ideation at evaluation	15	16	31
Patients with prior suicide attempts	4	1	5

depressive episode was 8.8 years. The median number of previous therapists was 2.0. The median number of previous episodes of depression was 2.9.

The group's mean MMPI profile at intake indicated substantial psychopathology. *T* scores were elevated at 70 or above on 7 of the 10 clinical scales with peaks on *D, Sc, Pt,* and *Pd* yielding an average group profile of 2-8-7-4. Figure 1 presents the mean MMPI profiles separately for the two treatment groups. The cognitive therapy and pharmacotherapy groups did not significantly differ on any of the clinical or validity scales.

Each patient included in the study received a thorough evaluation and met a series of clinical criteria. Initially, applicants were screened over the telephone by a research technician. To qualify for the full evaluation each patient had to be at least moderately depressed, defined by a minimum score of 20 on the Beck Depression Inventory (see Measures and Rating Scales below).

An experienced psychiatrist or clinical psychologist conducted a full 3-hour evaluation within 7 days of the telephone screening. The evaluation consisted of a clinical interview and a battery of tests and scales. Prior to the evaluation, the patients agreed that if eligible for the study they would accept *either* pharmacotherapy or psychotherapy. They were advised of the nature of the study and the available treatment modalities and that acceptance into the study precluded the concurrent use of other psychotropic medications. Every patient had signed a consent form approved by

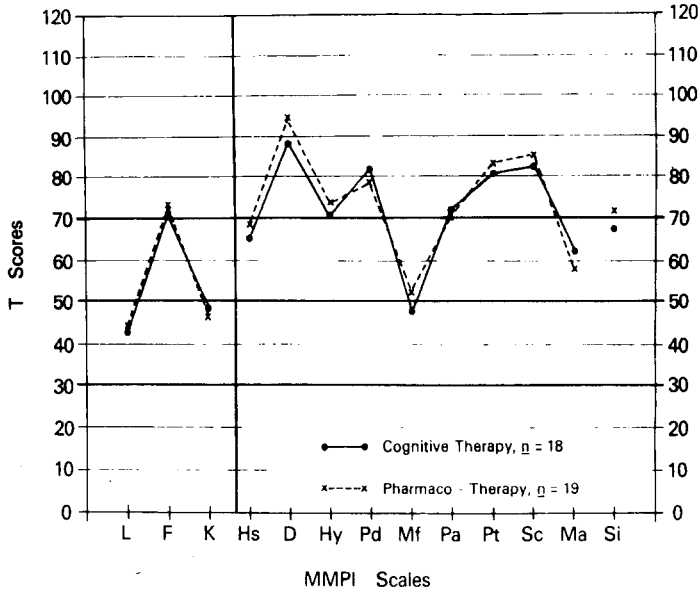

Fig. 1. Intake MMPI profiles of patients assigned to cognitive therapy and pharmacotherapy. Note: reduced *N*s are due to missing scales on some patients.

the Committee on Studies Involving Human Beings of the University of Pennsylvania. This consent form specified the nature and potential risks and benefits of the study. Each subject was free to leave the study at any time. No indication of expected results was given.

To be accepted in the study, patients had to meet the following inclusion criteria at the time of intake evaluation: (a) moderate to severe levels of depression defined as minimum scores of 20 on the self-rated Beck Depression Inventory (thus patients whose scores dropped below 20 between the telephone interview and the evaluation were eliminated); (b) a minimum score of 14 on the 17-item Hamilton Rating Scale for Depression; and (c) a "definite" depressive syndrome diagnosis according to the criteria of Feighner, Robins, Guze, Woodruff, Winokur, and Munoz (1972).

Patients who showed any one of the following were excluded from the study: (a) a history of schizophrenia, alcoholism, drug addiction, bipolar affective disorder, organic brain syndrome, or antisocial personality disorder; (b) hallucinations, delusions, or other clinical signs which indicated the advisability of inpatient hospitalization; (c) medical history which contraindicated the prescription of antidepressant medication; or (d) a prior history of a poor response to an adequate trial of tricyclic antidepressants.

A total of 110 applicants were fully evaluated. The 41 patients who constitute the sample of the present study met all the inclusion and none of

the exclusion criteria. According to DSM-II nomenclature (American Psychiatric Association, 1968), all the patients satisfied the criteria of neurotic depression. Although a notable proportion of the patients had "endogenous" symptoms (decreased weight, appetite, sleep, and libido), no patient evidenced hallucinations or delusions.

Procedure

Patients were assigned to either cognitive therapy or antidepressant treatment on a random basis, restricted only by the availability of therapist time. Assignment to treatment modality was determined *prior* to evaluation.

Of the 41 patients, 19 patients were assigned to cognitive therapy and 22 patients to pharmacotherapy. The research protocol called for a maximum of 20 cognitive therapy sessions over a 12-week period, or a maximum of 12 pharmacotherapy sessions over a 12-week period.

A number of procedures were used to monitor the patients' progress. Every week each patient completed a set of rating scales which assessed a number of psychopathological and personality variables. The therapists also filled out clinical rating scales at weekly intervals. Every 2 weeks, the patients were evaluated by an independent clinician who completed a number of clinical rating scales. This clinician was not blind to treatment assignment. Pilot testing indicated that blind clinical ratings could not be obtained since raters were able to identify patients in the drug group by the presence of medication side effects.

At the time of treatment termination, the full intake assessment battery and a thorough clinical evaluation were repeated. Monthly follow-up evaluations since treatment termination have been conducted to assess the long-range effects of the treatments.

Measures and Rating Scales

The measures included self-rating scales and clinical rating scales of various psychopathological variables and standardized personality inventories. In the present paper, data are reported only on levels of depression and anxiety.

The Beck Depression Inventory (BDI) was one of the self-report measures of depression (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Beck, 1967). The BDI consists of 21 items which assess numerous manifestations of depression; each item is scored on a range from 0 to 3. The total possible score range is from 0 to 63. The larger the score, the greater the severity of depression. The reliability and validity of the BDI have been reported elsewhere (Beck, 1967; Beck & Beamesderfer, 1974).

The Hamilton Rating Scale for Depression (HRS-D) was completed by an independent clinician (Hamilton, 1960, 1969). This version of the HRS-D consists of 17 items rated on either a 0-to-2- or a 0-to-4-point scale, and yields a potential score range from 0 to 50. Over a sample of 15 interviews, the interrater reliability for varied pairs of raters was both statistically significant and adequate for research purposes ($r = .90$, $p < .001$).

The Raskin Depression Scale (Raskin, Schulterbrandt, Reatig, & McKeon, 1970) is a clinical rating scale which was completed by the therapist. The Raskin Scale rates three separate depressive clusters each on a 1-to-5-point scale. Thus, the total Raskin rating can range from 3 to 15. The Raskin was included to facilitate comparison with other studies of the treatment outcomes of depression (e.g., Klerman et al., 1974; Covi et al., 1974; Friedman 1975).

The Hamilton Rating Scale for Anxiety (HRS-A) has been widely employed in psychiatric research (Hamilton, 1959). The HRS-A consists of 17 items; each item is rated on a 0 to 4 scale. Total HRS-A scores range from 0 to 68; higher scores indicate greater symptom severity. The HRS-A was also completed by the independent clinician.

Treatment Modalities

The assumptions and techniques of cognitive therapy have been briefly described above (for a more complete review see Beck, 1976).

Patients in cognitive therapy were seen for a maximum of 20 50-minute sessions. While the research protocol called for the 20 treatment sessions over 12 weeks, four patients required between 13 and 18 weeks to complete treatment (due to vacation and business trips). Those who completed cognitive therapy averaged 10.90 weeks in treatment with an average of 15.3 sessions.

Pharmacotherapy involved once-a-week 20-minute sessions for a maximum of 12 treatment visits. The treatment sessions involved careful evaluation of medication side effects as well as nonspecific supportive therapy. Imipramine hydrochloride was administered flexibly to obtain optimum clinical response. The starting imipramine dosage was 75 mg at bedtime. The dosage was raised to and maintained at 150 mg daily for treatment weeks 2 to 4. The dosage could then be raised to 200 mg daily for weeks 5 through 7, and up to 250 mg from weeks 8 through 10 when clinically indicated. The last 2 weeks were used to taper off and then discontinue medication. Those who completed the course of pharmacotherapy averaged 10.86 weeks in treatment.

Setting and Therapists

The patients were evaluated and treated on a fee-for-service basis under the aegis of the "Mood Clinic," part of the Outpatient Psychiatry Department, University of Pennsylvania. Fees were set on a sliding scale and no patient was dropped from the study because of inability to pay.

Eighteen therapists participated in the study. The therapists included 11 psychiatric residents, 2 postdoctoral and 2 predoctoral clinical psychologists, and 3 psychiatrists who had recently completed training. As a group, they were inexperienced in psychotherapy but had previously treated at least one depressed patient with cognitive therapy. However, the 14 residents and psychiatrists in the group had substantial previous training and experience with the pharmacotherapy of depression.

Psychotherapy sessions were tape-recorded and the therapists were systematically supervised on a weekly basis by three experienced clinicians (A.T.B., A.J.R., & M.K.). None of these investigators treated any cognitive therapy patients in this study. Both treatment modalities were conducted according to a Treatment Manual (Beck, Rush, & Kovacs, Note 4). A recent analysis of randomly selected tapes by an independent research assistant indicates that the therapists did adhere to the treatment instructions.

RESULTS

Patients in both treatment modalities showed a significant reduction in depressive symptomatology. The data also indicate a similarly significant reduction in levels of anxiety for both cognitive therapy and pharmacotherapy patients.

Of the 19 patients assigned to cognitive therapy, 1 patient discontinued treatment (dropped out) after three sessions when a crisis was resolved independently of treatment. Of the 22 patients assigned to pharmacotherapy, 8 patients discontinued treatment: 2 patients had to be withdrawn from the medication because of side effects, 1 required a change in treatment because of an acute suicidal crisis, and 5 terminated against therapist's advice. The predominant reason given by these 5 patients was their failure to respond to treatment. Significantly more patients dropped out of pharmacotherapy than cognitive therapy ($\chi^2 = 4.17$, $p < .05$).

Pretreatment and treatment outcome data are tabulated and presented in two ways: (a) for patients who *completed* each modality ("completers") and (b) for the entire sample admitted to each treatment. For each treatment modality, t tests were computed to assess the effects of

Table III. Mean Beck Depression Inventory Scores at Initiation and Termination of Treatments

Time of assessment		Completers only: Cognitive therapy (N = 18)	Completers only: Pharmacotherapy (N = 14)	Completers plus dropouts: Cognitive therapy (N = 19)	Completers plus dropouts: Pharmacotherapy (N = 22)
Pretreatment	$\bar{X}$	30.28	30.79	30.21	30.09
	SD	6.82	6.03	6.64	6.16
Posttreatment	$\bar{X}$	5.94	13.00	7.26	17.45
	SD	5.33	12.71	7.74	12.47

treatment intervention (pre-post comparisons). One-way analyses of covariance were conducted to test for differential treatment effects across the groups (cognitive therapy vs. pharmacotherapy comparisons).

Analyses of treatment termination data for the full samples (completers plus dropouts in each treatment) were done via end-point analysis (Friedman, 1975). In end-point analysis, the last recorded score of a prematurely terminated patient is carried through all subsequent analyses on a particular measure.

Table III presents initial and treatment termination levels of depression, assessed by the self-rated BDI. The two treatment groups did not significantly differ in initial BDI scores. Similarly, there was no significant difference in initial BDI scores between pharmacotherapy and cognitive

Table IV. Clinical Ratings of Severity of Depression at Initiation and Termination of Treatments[a]

Time of assessment		Hamilton Rating Scale for Depression: Completers only: Cognitive therapy (N = 15)	Completers only: Pharmacotherapy (N = 14)	Completers plus dropouts: Cognitive therapy (N = 16)	Completers plus dropouts: Pharmacotherapy (N = 20)
Pretreatment	$\bar{X}$	21.20	22.43	20.94	21.95
	SD	3.34	4.24	3.40	4.27
Posttreatment	$\bar{X}$	5.80	9.29	6.25	10.10
	SD	3.67	6.62	3.98	5.94
		Raskin Depression Rating Scale			
		(N = 14)	(N = 10)	(N = 15)	(N = 14)
Pretreatment	$\bar{X}$	9.86	10.20	9.93	9.86
	SD	1.75	.92	1.71	1.41
Posttreatment	$\bar{X}$	3.93	5.80	4.20	7.10
	SD	1.44	3.49	1.82	3.48

[a] Reduced Ns are due to missing pre- or posttreatment scales on some patients.

therapy patients when only completers are compared. Moreover, the dropouts, taken as a group, did not differ significantly in initial depression scores from the rest of the patients.

As the data in Table III indicate, both cognitive therapy and pharmacotherapy resulted in a significant decrease in depressive symptomatology, $t(17) = 11.76, p < .001$; $t(13) = 4.55, p < .001$, respectively. Although at termination, mean BDI scores for completers plus dropouts are higher than for completers only, the pre-post differences remain significant for both treatment modalities (see Table III). One-way analysis of covariance for treatment effects disclosed that cognitive therapy resulted in significantly more improvement than pharmacotherapy, $F(1,29) = 4.43, p < .05$. As the data in Table III indicate, cognitive therapy completers had a mean termination BDI of 5.94, while pharmacotherapy completers had a mean of 13.00. The significant treatment effect in favor of cognitive therapy was accentuated when the analysis included dropouts, $F(1,38) = 9.27, p < .01$.[3]

Analyses of the data from clinical ratings of depression essentially parallel the results obtained with the BDI. In Table IV, initial and posttreatment levels of depression are reported as reflected by HRS-D scores (filled out by independent evaluators) and Raskin ratings (filled out by therapists themselves).

The two groups of treatment completers did not differ significantly in initial HRS-D or Raskin scores. Similarly, inclusion of dropouts in the comparisons did not show a significant between-group difference on initial scores for either clinical measure.

As the data in Table IV further indicate, both cognitive therapy and pharmacotherapy resulted in a significant reduction in depressive symptomatology as reflected in clinical ratings. The significant treatment effect for cognitive therapy and pharmacotherapy is reflected by both HRS-D scores, $t(14) = 7.78, p < .001$, and $t(13) = 5.33, p < .001$, respectively, and Raskin scores, $t(13) = 9.50, p < .001$, and $t(9) = 3.74, p < .01$, respectively.

Analysis of HRS-D scores through one-way analysis of covariance for treatment effects yielded significant differences in favor of cognitive therapy,

[3]The superiority of cognitive therapy over pharmacotherapy was first evident at the second week of treatment. By week 10, the BDI score was 11.1 for the cognitive therapy and 15.9 for the pharmacotherapy patients. This trend was significant at the .15 level. Between weeks 10 and 12 the mean BDI score of the pharmacotherapy group *increased* by 2.43, while the mean BDI score of the cognitive therapy group decreased by 2.17. The increased mean score of the pharmacotherapy group reflects a severe relapse in one patient while the scores of the other patients in this group remained essentially unchanged. A question may be raised as to whether the leveling of improvement in some of the pharmacotherapy patients reflects the reduction of drug dosage. To answer this question, future studies should maintain the pharmacotherapy patients at full dosage until the study is completed (week 12 in this instance) and initiate the tapering off subsequently.

$F(1,26) = 5.19, p < .05$. As the data in Table IV indicate, the mean termination HRS-D was 5.80 for cognitive therapy and 9.29 for pharmacotherapy. When the analysis includes dropouts, cognitive therapy continues to show significantly lower posttreatment levels of depression than pharmacotherapy on ratings by independent clinicians, $F(1,33) = 6.41, p < .05$.

Finally, analysis of treatment completers' Raskin scores for differential treatment effect shows a nonsignificant trend in favor of cognitive therapy. However, when the analysis includes dropouts, the Raskin scores show a significant cognitive therapy treatment effect, $F(1,26) = 6.12$, $p < .05$.

Thus, analyses of data from one self-rating and two clinical rating scales of depression yield similar results. The findings indicate that (a) the treatment groups did not differ in initial levels of depression, (b) both treatment modalities resulted in significant reduction in depressive symptomatology, and (c) cognitive therapy is significantly more effective than pharmacotherapy in reducing depressive symptomatology.

Since presentation and analyses of group data may be misleading and may reflect small but consistent between-group differences that have little clinical relevance, Table V presents a posttreatment clinical classification of patient status. Levels of depression are classified by the BDI. The range of scores for each improvement category is based on previous comparisons of the BDI with clinician's ratings (Beck et al., 1961; Schwab, Bialow, Clemmons, Martin, & Holzer, 1967). These studies indicated, for example, that patients with BDI scores of less than 10 were generally judged to be clinically nondepressed by experienced diagnosticians. In clinical terms, posttreatment BDI levels of 9 or less are classified as marked improvement, or complete remission of symptoms (if a 0 score was obtained); scores between

Table V. Clinical Status of Patients at the End of Treatment

Status[a]	Cognitive therapy	Pharmacotherapy
Markedly or completely improved (0–9)	15	5
Partially improved (10–15)	2	6
Not improved (⩾ 16)	1	3
Dropouts[b]	1	8
Total assigned treatment	19	22

[a] Numbers in parentheses indicate Beck Depression Inventory cutoff scores.

[b] According to their Beck Depression Inventory scores, all dropouts had a "not improved" clinical status classification at the time of termination.

Table VI. Mean Hamilton Rating Scale for Anxiety Scores at Initiation and Termination of Treatments[a]

		Completers		Completers plus dropouts	
		Cognitive therapy (N = 15)	Pharmacotherapy (N = 13)	Cognitive therapy (N = 16)	Pharmacotherapy (N = 18)
Pretreatment	$\bar{X}$	17.73	20.69	18.31	20.56
	SD	5.68	6.10	5.95	5.90
Posttreatment	$\bar{X}$	6.73	10.23	8.00	10.78
	SD	4.18	7.20	6.48	6.27

[a] Reduced Ns are due to missing pre- or posttreatment scores on some patients.

10 and 15, inclusive, as partial improvement or partial remission; and scores of 16 or above as nonremission of symptoms. The posttreatment classification disclosed that while 15 cognitive therapy patients showed marked improvement or complete remission of symptoms, only 5 pharmacotherapy patients did so. Comparing the two treatment modalities, the distribution of completers who showed marked improvement or complete remission versus the rest of the patients was statistically significant, χ^2 (1) = 5.72, $p < .02$.

Since depressed patients may also commonly show symptoms of anxiety, data from the HRS-A were analyzed. The data in Table VI present the mean pretreatment and posttreatment anxiety scores for patients in both treatment modalities. Comparisons of initial scores for patients in the two treatments (completers only, and completers plus dropouts) showed no significant between-group difference on initial anxiety.

Pre-post treatment comparisons indicate significant reduction in anxiety scores for both cognitive therapy and pharmacotherapy, t (14) = 6.00, $p < .001$, and t (12) = 3.94, $p < .01$, respectively. The significant treatment effects persist for both cognitive therapy and pharmacotherapy when the analyses include dropouts, t (15) = 5.58, $p < .001$, and t (17) = 4.99, $p < .001$, respectively.

Between-groups comparison through one-way analysis of covariance did not show a significant difference in favor of one treatment over the other, although the trend toward lower anxiety scores seemed to favor the cognitive therapy group, F (1,25) = 2.15, $p < .15$. No such trend was evident when dropouts were added to the analysis.

Follow-up data have been gathered on 38 patients at approximately three and six months after treatment termination. Three dropouts from the pharmacotherapy group declined to be followed up. Follow-up information on the 38 patients indicates that 13 of 19 patients (68%) in the pharmacotherapy group re-entered treatment for depression. On the other hand, only 3 (16%) of the 19 psychotherapy patients sought treatment after protocol termination (χ^2 = 8.74, $p < .01$).

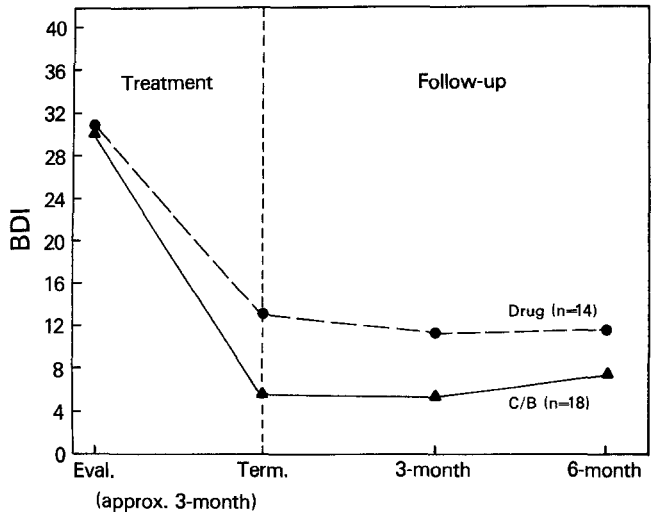

Fig. 2. Self-Reported level of depression: Completers only

To assess the long-term effects of treatment intervention, a preliminary analysis of the self-rated BDIs obtained at the two isolated points in time (3 months and 6 months) was conducted. More complex analyses will be undertaken to take into account duration and variability of symptomatology over time. Levels of depression, as assessed by the BDI, are presented in Figure 2. As the data indicate, treatment gains evident at termination were maintained over the follow-up time period. Compared to termination scores, none of the within-group changes over time was significant, either for completers alone or for completers and drop-outs combined. When all patients, including drop-outs, were considered, the cognitive therapy group had significantly lower scores at three months than the pharmacotherapy group, $F(1,35) = 6.65$, $p < .01$, and showed a nonsignificant trend toward lower scores at six months, $F(1,35) = 2.69$, $p < .11$. When the data were analyzed for treatment completers only, at three months the cognitive therapy group still showed significantly lower scores than the pharmacotherapy group, $F(1,29) = 3.85$, $p < .06$, and a nonsignificant trend toward lower scores at six months, $F(1,29) = 1.47$, $p < .23$.

SUMMARY AND DISCUSSION

Both cognitive therapy and pharmacotherapy were found to be effective in the treatment of unipolar depressed outpatients. Both treatments resulted in substantial and statistically significant reduction in depressive

symptomatology as documented by patient self-reports and clinical evaluations. Furthermore, both treatments were associated with significant and comparable decreases in the levels of anxiety.

While both treatments were successful in reducing depressive symptomatology, we found that cognitive therapy was superior to pharmacotherapy for patients admitted to our treatment setting. The greater efficacy of cognitive therapy is evident in both self-report symptom ratings and clinical assessments. The superiority of cognitive therapy is clearly demonstrated by the finding that 78.9% of the cognitive therapy patients admitted to the study showed marked clinical improvement or complete remission of symptoms as compared to 22.7% of the pharmacotherapy patients.

When treatment adequacy is evaluated in terms of prevention of premature treatment termination, then cognitive therapy again is found to be superior to pharmacotherapy; i.e., significantly more patients dropped out of pharmacotherapy than did out of cognitive therapy. Furthermore, the data show that premature termination of treatment was associated with high levels of depressive symptomatology.

The results of our study indicate that cognitive therapy may hold great promise as a short-term treatment for depressed outpatients. While the present study documents the superiority of cognitive therapy over pharmacotherapy, the work of Shaw (in press) and Morris (Note 1) indicates that cognitive therapy is also more efficacious than nondirective, behavioral, or insight-oriented psychotherapy in the treatment of depressed patients.

Results of our study contrast with a number of other studies which report the superiority of pharmacotherapy over various forms of psychotherapy (Covi et al., 1974; Friedman, 1975). Potential methodological reasons for this discrepancy are discussed below. However, from a clinical point of view, the most parsimonious explanation may relate to the nature of the psychotherapies employed. It is possible that cognitive therapy is more successful than marital therapy (Friedman, 1975), social work counseling (Klerman et al., 1974), or traditional group therapy (Covi et al., 1974), since it was specifically designed for the treatment of depression. Cognitive therapy, evolved through extensive clinical and empirical work with depressed patients (Beck, 1967, 1976), is specifically directed at the core psychological problems of depression (for example, pessimism, hopelessness, negative self-evaluation, reduced motivation, and inertia). Thus, the specificity and targeted approach of cognitive therapy may account in part for its success rate compared to those reported for other psychotherapies.

In view of the fact that we had not expected cognitive therapy to be superior to pharmacotherapy in our sample of chronically or intermittently depressed outpatients, it is important to look for possible methodological inadequacies or other factors that might explain the findings and to examine

alternative interpretations of the results. Some possible criticisms are listed below.

1. *The relatively high success rates could have been obtained because the patient sample was likely to respond to virtually any intervention.* This objection may be countered by two types of data. First of all, as a group, the patients had a long history of depression, multiple unsuccessful attempts at treatment, moderate to severe levels of depression at intake evaluation, and initial MMPI profiles indicative of substantial psychopathology. Thus, their histories of illness suggest a group more likely to be refractory than responsive to treatment. Secondly, the pharmacotherapy treatment group showed a degree of response comparable to that reported by Covi et al. (1974) for imipramine and by Klerman et al. (1974) for amitriptyline.[4] In addition, the response rate for both the pharmacotherapy and cognitive therapy groups exceed the reported ranges for placebo response in depressed outpatients (see Morris & Beck, 1974, for a review).

2. *Treatment assignment was biased; for example, patients likely to respond to cognitive therapy might have been assigned to that treatment modality.* This criticism is countered by the fact that treatment assignment was essentially random, restricted only by availability of therapists. Open therapy slots for therapists were identified and patient assignment made *prior* to the actual evaluation. Although no attempt was made to match the treatment groups for age, sex, psychiatric history, MMPI profiles, or current symptomatology, the data presented indicate that the two groups were comparable with respect to these dimensions.

3. *The expectational set of the therapists and/or patients militated against a good response to pharmacotherapy and favored a good response to psychotherapy.* Although our study did not control for the expectational set of patients, willingness to accept *either* treatment modality was one of the criteria for evaluation and acceptance into the study. Regardless of expectational set, however, the data suggest that the pharmacotherapy

[4]Klerman et al. (1974) defined "significant clinical improvement" in their pharmacotherapy sample as a 50% decrease in initial Raskin scores. Applying this formula to the 10 pharmacotherapy-assigned patients in our study who had both pre and post Raskin ratings, 43% showed significant improvement compared to the Klerman et al. 54%. Since we had pretreatment BDIs on all of the patients in our pharmacotherapy group, we applied the same formula (viz., 50% of pretreatment BDI scores) and found 50% of the patients met this criterion of significant clinical improvement.

Covi et al. (1974) used a reverse 6-point scale (0 = very much better, 6 = very much worse) to define global clinical change and reported a mean improvement rating of 1.19 for pharmacotherapy completers. Using percentage change in initial BDI scores as the index of response to therapy (for example, very much better is defined as a 50% or greater reduction in initial BDI), we obtained a mean global improvement rating of .86 for our pharmacotherapy completers. Of the 14 pharmacotherapy completers, 12 were rated as "very much better" or "quite a bit better." Thus, the improvement in our pharmacotherapy patients compared favorably with that reported by Covi et al. (1974).

response rate was comparable to those reported in the literature. Although the dropout rate for pharmacotherapy was higher than for cognitive therapy, it was nevertheless similar to that reported by Covi et al. (1974).

The criteria for admission into the study actually biased patient selection in favor of pharmacotherapy by excluding patients who had a history of failure in such treatments, while previous psychotherapy failures were not excluded. Moreover, given their previous training and clinical experience with antidepressant drugs as well as their familiarity with the pharmacotherapy literature, the majority of our therapists were disposed to expect a more efficacious response to pharmacotherapy in our patient sample.

4. *Since the clinical evaluators were not blind as to treatment assignment, bias in favor of cognitive therapy may have affected their ratings.* Although the evaluators were not blind, the clinical ratings paralleled the patient's self-ratings. Specifically, both HRS-D and BDI showed comparable significant pre-post differences for both treatments as well as significant treatment effects in favor of cognitive therapy. The essentially similar results from the two sets of ratings do not support the contention of evaluator bias.

5. *The higher dropout rate from pharmacotherapy may have been associated with early favorable treatment response.* Inspection of scores for dropouts suggests that these patients were highly symptomatic at the time they discontinued treatment. Moreover, the patients reported lack of symptomatic improvement as the predominant reason for discontinuing. Thus, the pharmacotherapy dropouts were a subgroup with poor rather than favorable early response.

Poor clinical response, as a reason for discontinuing treatment, is also supported by a previous pilot study which compared once-a-week with twice-a-week cognitive therapy (Rush, Beck, Kovacs, Khatami, Fitzgibbons, & Wolman, Note 5). In that study, 9 of the 23 patients in the once-a-week group dropped out against therapist's advice, giving poor clinical response as their reason. This dropout rate is comparable to the pharmacotherapy dropout rate in the present study.

The study by Rush et al. (Note 5) would suggest that twice-a-week cognitive therapy may have been retaining early nonresponders, while the present pharmacotherapy treatment eliminated them. Consequently, in comparisons of patients who *completed* therapy in each group, elimination of nonresponders would favor pharmacotherapy.

6. *Since the two treatments differed substantially in actual time spent with the therapist, this gave an advantage to cognitive therapy.* The frequency of psychotherapy sessions was designed to maximize the effects of cognitive therapy. Thus, cognitive therapy patients did spend more time in actual therapeutic contact than pharmacotherapy patients. The frequency

of cognitive therapy visits was based on our earlier examination of variable therapy schedules (Rush et al., Note 5). Since the studies that established the efficacy of pharmacotherapy for depressed outpatients used a once-a-week, minimal-contact design, there was no a priori reason to attempt to equate the two groups on the dimensions of therapy time and frequency. Whether more frequent visits would enhance medication effects is an empirical question beyond the scope of the present study.

It is unlikely that the total amount of time spent with the therapist was solely responsible for the superiority of cognitive therapy since, in other studies which compared psychotherapy and pharmacotherapy, patients in the former group received more therapist time, yet those in the latter group showed greater symptomatic relief (for example, Covi et al., 1974).

It should be noted that a few cognitive therapy patients missed treatment sessions because of incidental and unpremeditated factors such as vacations, unexpected business trips, or physical illness; hence, "makeup" sessions extended the duration of treatment beyond the 12-week limit in these cases. Nonetheless, the mean number of treatment weeks was essentially the same for patients who completed therapy in each group.

Although the greater therapist-patient contact may have contributed to the superiority of cognitive therapy, this variable may simply underscore the importance of interpersonal and psychological factors in the treatment of depression.

7. *The findings may not be generalizable due to unique features of the therapeutic setting.* This criticism is partly related to the problem outlined in (3) but covers broader social-psychological grounds.

To evaluate whether the results may be due to the "Hawthorne effect," we need to consider that the cognitive therapy of depression was not "new" to our clinic. We had been using this method for selected patients for over a decade. Furthermore, our initial pilot study of cognitive therapy (Rush et al., Note 5) showed much weaker treatment effects than the present study. Since the Hawthorne effect is supposed to decay on repetition of the same condition, worse, not better, results would be expected with a second study.

Another possible criticism is that the therapists' supposedly high enthusiasm and dedication to cognitive therapy may have had a powerful nonspecific treatment effect. In actuality, however, an informal tally of therapists' treatment preferences indicates that the majority participated in the study solely for didactic and training reasons and were, in fact, committed to a psychoanalytic orientation. Many of these clinicians were undergoing personal psychoanalytic therapy and/or were enrolled in a psychoanalytic institute.

Moreover, other studies in which the therapist had no a priori commitment to cognitive therapy also reported the superiority of this modality over other forms of psychotherapy (for example, Shaw, in press).

The question could also be raised as to whether the atmosphere and reputation of our clinic, in which the cognitive therapy of depression was developed and refined, could account for the findings ("The Lourdes Effect"). The positive findings by investigators in distant and unrelated institutions which were not cognitively oriented greatly weakens this argument (Shaw, University of Western Ontario; Taylor and Marshall, Queens University; Schmickley, Michigan State University). The likelihood of a "bandwagon" effect is vitiated by the fact that these investigators initiated their studies independently, and *prior* to our own systematic outcome study.

In spite of the shortcomings of the current investigation, the results have numerous practical implications and highlight areas for further research. Given future cross-validation of the present results, cognitive therapy may become acknowledged as an efficacious type of intervention for the treatment of outpatients with unipolar depressions.

Further analysis of our data and additional studies may pinpoint which type of patient may be most responsive to cognitive therapy or pharmacotherapy. Cognitive therapy would appear to have a specific applicability for patients who are not candidates for pharmacotherapy because of medical contraindications or histories of poor or no drug response, or for reasons of personal preference.

Since cognitive therapy is a short-term treatment modality, it is economically feasible for a relatively wide range of patients. Moreover, since with even a brief training period, relatively inexperienced therapists can learn and practice cognitive therapy effectively, it has practical advantages over forms of psychotherapy that require extensive training, supervision, and experience. Thus, cognitive therapy appears to be effective, economical, and teachable.

Finally, cognitive therapy may offer an advantage over pharmacotherapy in the prophylaxis of some depressions. Since cognitive therapy involves highly specific learning experiences, it aims to provide the patient with strategies to combat the psychological factors that predispose him to depression and to cope better with situational factors that precipitate depression. Thus, he may be able to counteract an incipient depression by applying the acquired techniques as soon as he becomes aware of his dysphoria and negative cognitions. This hypothesis can be tested through follow-up studies which compare the relative relapse rate of patients who received pharmacotherapy and cognitive therapy.

Our results require cross-validation on a similar patient sample. In addition, while at least one study indicates the applicability and efficacy of cognitive therapy with patients drawn from a predominantly rural area (Schmickley, Note 2), the generalizability of our findings to other populations of depressed patients (e.g., lower socioeconomic class patients) should be examined. Finally, further studies are planned to assess whether the combination of cognitive and pharmacotherapy may have a synergistic effect in the treatment of acute depressive symptoms and in the prophylaxis of recurrent depressions.

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