ORIGINAL ARTICLE

Telephone-Administered Psychotherapy for Depression

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Background: Several studies have shown that telephone-administered cognitive-behavioral therapy (T-CBT) is superior to forms of no treatment controls. No study has examined if the skills-training component to T-CBT provides any benefit beyond that provided by nonspecific factors.

Objective: To test the efficacy of a 16-week T-CBT against a strong control for attention and nonspecific therapy effects.

Design: Randomized controlled trial including 12-month follow-up.

Setting: Telephone administration of psychotherapy with patients in their homes.

Participants: Participants had depression and functional impairments due to multiple sclerosis.

Interventions: A 16-week T-CBT program was compared with 16 weeks of telephone-administered supportive emotion-focused therapy.

Main Outcome Measures: Hamilton Depression Rating Scale score, Structured Clinical Interview for *DSM-IV* diagnosis of major depressive disorder, Beck Depression Inventory score, and Positive Affect scale score of the Positive and Negative Affect Scale.

Results: Of the 127 participants randomized, 7 (5.5%) dropped out of treatment. There were significant improvement during treatment on all outcome measures ($P<.01$ for all) and an increase in Positive Affect Scale score. Improvements over 16 weeks of treatment were significantly greater for T-CBT, compared with telephone-administered supportive emotion-focused therapy, for major depressive disorder frequency ($P=.02$), Hamilton Depression Rating Scale score ($P=.02$), and Positive Affect Scale score ($P=.008$), but not for the Beck Depression Inventory score ($P=.29$). Treatment gains were maintained during 12-month follow-up; however, differences across treatments were no longer evident ($P>.16$ for all).

Conclusions: Patients showed significant improvements in depression and positive affect during the 16 weeks of telephone-administered treatment. The specific cognitive-behavioral components of T-CBT produced improvements above and beyond the nonspecific effects of telephone-administered supportive emotion-focused therapy on evaluator-rated measures of depression and self-reported positive affect. Attrition was low.

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DEPRESSION IS COMMON, with the 12-month prevalence of major depressive disorder (MDD) for the general population ranging from 7.6% to 10.3%[1,2] and many more persons meeting the criteria for dysthymia and subthreshold depression. Depression impacts the ability to perform essential social roles, including work.[3] While two thirds of depressed patients would prefer psychotherapy over antidepressant medication,[4-8] only 10% to 45% ever even make a first appointment.[9,10] Among those patients who attend the initial appointment, nearly half will drop out before the end of treatment.[11] Even within the structure of a clinical trial, one third to half of all psychotherapy patients never complete treatment.[12,13]

There are numerous potential barriers to receiving psychotherapy, including physical impairments that interfere with attending regularly scheduled appointments, transportation problems, lack of available and appropriate services in the patient's geographic area, child care problems, lack of time, stigma, and lack of financial resources.[14,15]

There have long been clinical reports of the use of telephone-administered psychotherapy as a method of overcoming some of these barriers.[16,17] The use of telephone psychotherapy services increased in the 1990s in part because of the advent of 1-900 number counseling services and in part because of the increased use of telephone support services by insurance and medical groups.[18]

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In the past few years, telephone-administered psychotherapy has begun to receive some empirical evaluation. Most telephone-administered psychotherapies have used a cognitive-behavioral approach, which teaches skills aimed at depressogenic thoughts and behaviors.[19] This approach lends itself to telephone administration because it is structured and because it has been consistently shown to be effective at reducing depression and improving positive affect.[20] An 8-session telephone-administered cognitive-behavioral therapy (T-CBT) has been shown to be more effective than usual care in reducing depressive symptoms in patients with multiple sclerosis (MS).[21] Among depressed primary care patients, an 8-session T-CBT added onto usual care with antidepressants also has shown significant benefits.[22] These studies suggest that T-CBT may be effective at reducing symptoms of depression. However, these studies have used usual care and other less intensive interventions as controls, and have, therefore, raised the question of whether the specific content of T-CBT adds anything to nonspecific treatment effects (attention, empathy, and being engaged in treatment).[22]

To our knowledge, we have performed the first randomized controlled trial comparing T-CBT with telephone-administered supportive emotion-focused therapy (T-SEFT). Telephone-administered supportive emotion-focused therapy, an adaptation of emotion-focused therapy,[23] provided the strongest possible control for nonspecific effects of manualized psychotherapy, in that it controlled for attention, the nonspecific effects of therapeutic alliance (therapeutic bond, tasks, and goals), use of doctoral-level psychologists as therapists, and the effects of having a manualized treatment with specific therapist procedures that are clearly indicated, justified, and individualized to the patient. To our knowledge, this is also the first study to examine telephone-administered psychotherapy for depression in a sample selected based on having disabilities that pose substantial barriers to face-to-face psychotherapy. In this case, we selected patients with functional impairments resulting from MS. Multiple sclerosis is the most common debilitating neurological illness affecting young and middle-aged Americans.[24]

We hypothesized that while patients would significantly improve across both treatments, patients assigned to T-CBT would show significantly greater improvements in evaluator-rated and self-report measures of depression over 16 weeks of treatment, compared with patients assigned to T-SEFT. We also hypothesized that T-CBT would produce greater increases in positive affect, which is an important outcome independent of negative affect.[25] Cognitive-behavioral therapy promotes active coping, resulting in increased positive affect.[20] We further hypothesized that these improvements would be maintained over a 1-year follow-up and that patients receiving T-CBT would remain less depressed over the follow-up period.

METHODS

INCLUSION/EXCLUSION CRITERIA

Inclusion criteria consisted of the following: (1) a diagnosis of MS confirmed by a neurologist, (2) functional impairment resulting in limitations in activity as measured by a score of at least 3 (of a total possible score of 6) on one or more areas of functioning on the Guy's Neurological Disability Scale,[26] (3) a score of 16 or higher on the Beck Depression Inventory (BDI) and 14 or higher on the Hamilton Depression Rating Scale (HDRS), (4) the ability to speak and read English, and (5) being older than 18 years. Patients were excluded if they (1) met the criteria for dementia (described later); (2) were currently undergoing psychotherapy; (3) showed severe psychopathological features, including psychosis, current substance abuse, or plan and intent to commit suicide; (4) were currently experiencing an MS exacerbation; (5) had physical deficits that prevent participation in treatment or assessment, including inability to speak or read and write; and (6) use medications other than antidepressants that affect mood (eg, steroidal anti-inflammatory agents). Use of antidepressant medications was not exclusionary.

RECRUITMENT

Patients were recruited through Kaiser Permanente Medical Care Group of Northern California (KP) and regional chapters of the National Multiple Sclerosis Society. Within KP, patients with MS were identified through the KP database. Subsequent to approval by their neurologists, a letter was sent to patients inviting them to participate and asking that they return a stamped postcard if they did not want to be contacted further. Patients who did not return the postcards were called after 10 days. Following a brief description of the study, patients who were interested received a brief telephone screen assessing depressive symptoms and several exclusion criteria. Those who met the initial screening criteria were invited to participate in a longer eligibility assessment that included assessment of all inclusion and exclusion criteria. The consent process, approved by the University of California, San Francisco, and KP Human Subjects Review Committees, included initial verbal consent conducted by telephone followed by written consent obtained by mailing documents to the patient. Recruitment through regional National Multiple Sclerosis Society chapters was initiated via announcements in National Multiple Sclerosis Society chapter newsletters. Patients who called a toll-free number received a description of the study and a telephone screen, as previously described. The consent process was similar to that used with KP patients with the addition of a release of information that was mailed to the patient, which allowed study staff to confirm the MS diagnosis with the patient's neurologist.

ASSESSMENT

Self-report materials were mailed to participants with stamped addressed return envelopes. Interview assessments were conducted over the telephone. Participants were asked to complete self-report measures on the same day as the telephone assessment. Participants were paid $10 to $50 per assessment, depending on the time point and the length of the assessment. Telephone interview assessments were conducted by clinical evaluators with at least a master's degree in a mental health profession, who were blinded to treatment assignment. To facilitate preservation of the blinding, all assessment interviews commenced with a request by the interviewer that the participants not discuss any aspects of their treatment. Eight evaluators were used during the study. All interviews were audiotaped. All evaluators corated a tape once per month to calibrate and maintain reliabilities. All assessments occurred at baseline, at midtreatment (week 8), at posttreatment (week 16), and at 3-, 6-, 9-, and 12-month follow-up unless otherwise noted.

Current *DSM-IV* diagnoses of MDD and dysthymia and psychiatric exclusionary diagnoses were assessed using a telephone-

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administered Structured Clinical Interview for *DSM-IV* (SCID).[27] The SCID is reliable and valid when used over the telephone, with 90% to 97% agreement with face-to-face assessments.[28-30] Our raters maintained 100% agreement on MDD diagnoses during reliability checks using randomly selected audiotaped assessments. The SCIDs were administered at baseline, at posttreatment, and at 6- and 12-month follow-ups.

Evaluator-rated severity of depressive symptoms was assessed using a telephone-administered version of the HDRS.[31] This telephone version was developed and validated for use with the Medical Outcomes Study version of the HDRS.[32] Raters received training involving listening to and rating previous tapes and engaging in mock interviews. Interrater reliability from monthly reliability checks, using interclass correlations, averaged 0.89 (range, 0.75-0.97).

Self-reported depression severity was assessed using the BDI-II,[33] administered as a self-report instrument through the mail. All 3 measures of depression (SCID, HDRS, and BDI-II) contain somatic items that may be associated with MS.[34,35] We elected to retain these items because (1) confounded symptoms in depressed MS patients are usually related to MS and depression[35] and (2) the relatively slow rate of progression of MS symptoms would mean that much of the effect of MS on symptoms would be washed out in a repeated-measures design.

Positive affect was measured using the Positive Affect subscale of the Positive and Negative Affect Scale (PANAS-PA),[25] a self-report measure administered by mail.

Multiple sclerosis–related functional impairment and exacerbation were assessed using standardized structured interviews. The Guy's Neurological Disability Scale is a structured interview that assesses 11 basic areas of function (eg, limb function and vision) and produces a single score that is highly related ($r=0.81$) to objective measures of functional impairment based on neurologist examination.[26] We dropped the item assessing mood because it is confounded with our outcome measures. Each item rates a basic area of functioning from 1 (no symptoms) to 5 (a specific criterion reflecting extremely severe impairment). A 3 on any item reflects the point at which the functional impairment interferes with normal daily functioning. An MS exacerbation was assessed using a self-report scale that has been validated for this purpose.[36]

Dementia was evaluated using telephone-administered neuropsychological tests. Attention and concentration were assessed using Digit Span,[37] verbal memory was assessed using the California Verbal Learning Test,[38] executive function was measured using the Controlled Oral Word Association Test–FAS version,[39] and abstraction was measured using the similarities from the Wechsler Adult Intelligence Scale, third edition.[37] Telephone administration of these tests, or their equivalents, has been shown to be valid, reliable, and equivalent to face-to-face administrations[40-43] and has been used in previous telephone-administered studies with MS patients.[21,44] Previous research[21] has led to the development of a set of instructions that requests that the patient be alone in a room with no distractions and that the patient have no writing implements within reach. Subjects who scored below the fifth percentile on 2 of 4 tests were determined to have dementia sufficient to be excluded.

TREATMENTS AND CLINICIANS

Participants were randomized to one of two 16-week telephone-administered psychotherapies, T-CBT or T-SEFT. Participants spoke with a psychologist for 50 minutes each week. Randomization was stratified based on whether the participant was currently diagnosed as having MDD and currently used antidepressant medication. All treatments were administered by doctoral-level psychologists with 1 to 5 years of postdoctoral clinical experience.

Psychologists were nested in, rather than crossed with, treatment arm. This was done to avoid the influence of systematic therapist effects, such as treatment preferences, therapeutic orientation, or incremental therapist bias resulting from observation of the superiority of one treatment over another.[45] Nine psychologists were recruited based on their expertise and their theoretical orientation as expressed to one of us (D.C.M.) on interview and reports of references. The 5 T-CBT therapists were trained in that model and used it as their primary treatment modality in practice. The 4 T-SEFT therapists did not identify themselves as CBT therapists and did not report using any skills-training interventions in their practice. All T-SEFT therapists expressed a firm belief that the therapeutic relationship is the principal vehicle for change in psychotherapy.

All psychologists received 2 hours of weekly group supervision by a more senior psychologist whose theoretical orientation and training were consistent with the treatment model. Because antidepressant medication was not an exclusion criterion, therapists were prohibited from discussing anything having to do with attitudes, feelings, or adherence behaviors related to antidepressant medications. This proscription was implemented because the T-CBT model would encourage therapists to help patients adhere to or better manage their antidepressant treatment while the T-SEFT model would not, thereby introducing a confound. To monitor therapist adherence to the treatment models, 2 sessions from each participant were rated by blinded research assistants on a modified version of the Cognitive Therapy Scale.[46] The modified version of the Cognitive Therapy Scale included all Cognitive Therapy Scale items and items added to capture the focus on specific T-SEFT therapist procedures.

Telephone-administered cognitive-behavioral therapy is a structured cognitive-behavioral therapy based on standard CBT for depression.[19,47] A patient workbook that guides treatment has been developed.[21,48] The goal of T-CBT is to teach skills that help participants manage cognitions and behaviors that contribute to depression and improve skills in managing stressful life events and interpersonal difficulties. Initial sessions and chapters teach basic CBT skills, including behavioral activation, cognitive restructuring (including identification of automatic thoughts and negative thought patterns and methods to challenge these thoughts and thought patterns), and problem solving. These skills are then applied to problem areas identified by the participant and therapist, including social support, communication and assertiveness, and management of disabling symptoms.

Telephone-administered supportive emotion-focused therapy is an adaptation of the manual developed by Greenberg et al[23] for process-experiential psychotherapy, which has the goal of increasing participants' level of experience of their internal world. Therapeutic tasks included maintaining attention on empathic attunement, developing the therapeutic bond, and facilitating direct expression of present emotional experience and current needs. Interventions that promoted or indirectly focused attention on cognitions (eg, "What do you think about that?"), behaviors, or skills training were prohibited. In addition, telephone administration of T-SEFT, and the study goals, prevented implementation of some specific Gestalt therapy tasks suggested by Greenberg et al, such as empty chair work and 2-chair work. Thus, T-SEFT controlled for all nonspecific factors associated with T-CBT, including dosage, the therapeutic relationship, the use of a manualized treatment with a coherent theoretical justification and clearly described procedures, and individualized application of the treatment model.

DATA ANALYSIS

All analyses were conducted on an intent-to-treat basis. An initial analysis compared baseline demographics between treatment groups, using t tests for continuous data and χ^2 analyses

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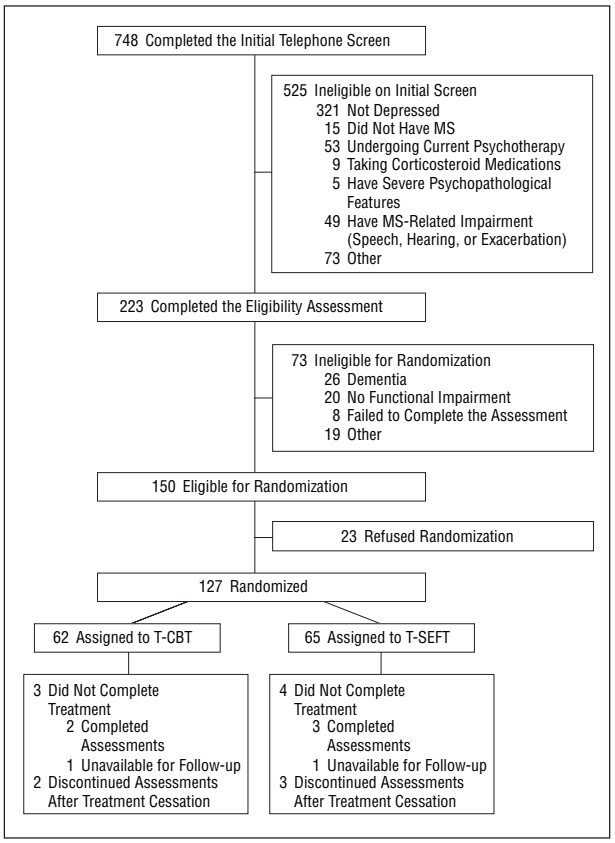

Figure. Flow of study participants through recruitment, intervention, and follow-up assessments. MS indicates multiple sclerosis; T-CBT, telephone-administered cognitive-behavioral therapy; and T-SEFT, telephone-administered supportive emotion-focused therapy.

for categorical data. Baseline diagnoses were also compared across treatment groups.

Continuous outcome measures (HDRS, BDI-II, and PANAS-PA scores) were analyzed with a random-effects model for repeated measures, using restricted maximum likelihood methods. This type of model can handle subjects with some degree of nonrandom missing time points.[49] Various within-patient error covariance structures (unstructured, simple, autoregressive, and compound symmetry) were tested, and nested models were compared using a likelihood ratio test. For each model, the unstructured covariance either fit best or was no different from any other covariance structure, and was, therefore, used in all models. Random-effects models also allow for individually varying intercepts and slopes. Each outcome model contains a random intercept and a random slope for the week of the study. Treatment outcome analyses included baseline and week 8 and 16 data. The treatment outcomes model evaluated the effects of treatment, time, and treatment × time interactions. Maintenance of gains analyses included week 16 and 3-, 6-, 9-, and 12-month follow-ups as dependent variables, treatment, and treatment × time interaction. All random-effects analyses were performed using SAS statistical software.[50]

Because the SCID MDD module was administered at baseline, at posttreatment (week 16), and at 6- and 12-month follow-up, analyses of treatment outcome or maintenance of gains would contain at most 2 time points as dependent variables, which is not sufficient to produce reliable results when modeling change over time in a random-effects model for repeated measures.[51] Therefore, changes in MDD frequency from baseline to end of treatment (week 16), end of treatment to 6-month follow-up, and end of treatment to 12-month follow-up were tested with the McNemar test, while the treatment effect was analyzed using logistic regression. Treatment effect was analyzed using MDD status at end of treatment as the outcome; baseline MDD status was controlled for in this model. Maintenance of gains at 6- and 12-month follow-up was analyzed using similar strategies, controlling for week 16 MDD status. All logistic regression analyses were performed using STATA statistical software.[52]

RESULTS

SAMPLE

The progress of participants through the trial is shown in the **Figure**. Of the 748 patients who completed the initial telephone screening, 223 met the preliminary criteria for a full eligibility assessment. Of those patients, 150 were found eligible for randomization. Of these 150 patients, 23 (15.3%) refused randomization. Of the remaining 127 patients, 62 were randomized to T-CBT and 65 were randomized to T-SEFT.

The baseline characteristics of participants randomized to 1 of the 2 treatment groups are shown in **Table 1**. Employment status was significantly associated with BDI-II score at baseline ($P=.045$) but not at posttreatment ($P=.21$). No other demographic, diagnostic, medication, or disability variable was associated with any outcome variable at baseline ($P>.06$ for all), and none of these variables was associated with treatment assignment ($P>.36$ for all). Therefore, no demographic, diagnostic, medication, or disability variables were included in subsequent analyses.

TREATMENT FIDELITY

Telephone-administered cognitive-behavioral therapy therapists were rated as performing significantly more cognitive-behavioral interventions on the modified version of the Cognitive Therapy Scale summary score ($t_{240}=-49.36$, $P<.001$), on individual items ($P<.006$ for all), and on the overall rating of CBT performance ($t_{240}=54.40$, $P<.001$). Telephone-administered supportive emotion-focused therapy therapists were rated as making significantly more interventions aimed at evoking emotional expression ($t_{240}=33.67$, $P<.001$) and fostering participants' awareness of internal experience ($t_{240}=4.03$, $P<.001$).

ATTRITION

Seven participants (5.5%) did not complete the 16 weeks of therapy (3 in the T-CBT group and 4 in the T-SEFT group). Of these 7 participants, 6 dropped out by their own choice. One participant in the T-CBT group reported being sexually assaulted during treatment and began showing signs of dissociation. Appropriate face-to-face treatment in the participant's community was arranged, and data collection was halted.

Of the 7 participants who discontinued therapy, 5 agreed to continue with follow-up assessments (2 in the T-CBT group and 3 in the T-SEFT group), while 2 dropped out of therapy and assessments (1 in each group). Five additional participants (3.9%) were unavailable for follow-up after treatment cessation (2 in the T-CBT group and 3 in the T-SEFT group).

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TREATMENT OUTCOMES

The means (SDs) for our continuous outcome measures are shown in **Table 2**. Results of the primary analyses of continuous variables are shown in **Table 3**. There were significant reductions during treatment for all depression measures, including the HDRS ($\beta_{time}=-.43$) and BDI-II ($\beta_{time}=-.62$) scores, a reduction in the frequency of MDD ($P<.001$), and a significant increase in the PANAS-PA score ($\beta_{time}=.17$). There were significant time × treatment interaction effects, indicating significantly greater improvements for T-CBT, compared with T-SEFT, for the HDRS ($\beta_{time\times treatment}=-.17$) and PANAS-PA ($\beta_{time\times treatment}=.25$) scores. The HDRS score was significantly different between treatment groups at weeks 8 and 16 ($P=.01$ at both time points). The PANAS-PA score was significantly different between treatment groups at week 16 only ($P=.03$). There was no significant time × treatment interaction effect for the BDI-II score.

The distribution of SCID MDD diagnosis among treatment groups is also shown in Table 2, and analysis results are given in **Table 4**. At week 16, there was a significant effect for treatment ($\beta_{time}=-1.10$). Telephone-administered cognitive-behavioral therapy produced a significantly greater reduction in MDD frequency, compared with T-SEFT (odds ratio, 0.33; 95% confidence interval, 0.13-0.85).

MAINTENANCE OF GAINS

There were no significant changes in the BDI-II and PANAS-PA scores from the end of treatment to the 12-month follow-up ($P>.19$ for all). However, there was a significant continuing decrease in HDRS score during the 12-month follow-up ($\beta_{time}=-.05$, $P=.004$). In the maintenance of gains analysis of SCID MDD, there was no significant change in MDD frequency from the end of treatment to the 6-month follow-up ($P=.33$), but there was a significant reduction in MDD frequency at the 12-month follow-up ($P=.04$). There was no significant treatment effect for any measure ($P>.16$ for all).

Table 1. Baseline Demographic Characteristics and Diagnoses*

Variable	T-CBT Group (n = 62)	T-SEFT Group (n = 65)	*P* Value
Age, y†	48.60 (9.62)	47.35 (10.10)	.48
Education, y†	15.26 (2.57)	15.46 (2.57)	.66
Monthly household income, $†	3621 (2545)	4017 (2679)	.41
Time diagnosed as having MS, y†	11.59 (10.05)	10.89 (10.06)	.70
GNDS total score (baseline)†	23.89 (5.82)	22.86 (6.69)	.36
Sex			
Female	47 (75.8)	51 (78.5)	.72
Male	15 (24.2)	14 (21.5)	
Marital status			
Single	5 (8.1)	10 (15.4)	.45
Married	38 (61.3)	38 (58.5)	
Separated, divorced, or widowed	17 (27.4)	17 (26.2)	
Living with a significant other	2 (3.2)	0	
Ethnicity			
White	58 (93.5)	56 (86.2)	.42
African American	3 (4.8)	3 (4.6)	
Latin American	1 (1.6)	1 (1.5)	
Native American	0	2 (3.1)	
Asian or Pacific Islander	0	1 (1.5)	
Other	0	2 (3.1)	
Employment status			
Employed	16 (25.8)	17 (26.2)	.77
Unemployed	7 (11.3)	7 (10.8)	
Disability	32 (51.6)	37 (56.9)	
Other	7 (11.3)	4 (6.2)	
Current diagnosis			
MDD	45 (72.6)	44 (67.7)	.64
Dysthymia	12 (19.4)	12 (18.5)	.92
Current antidepressant use	34 (54.8)	36 (55.4)	.87

Abbreviations: GNDS, Guy's Neurological Disability Scale; MDD, major depressive disorder; MS, multiple sclerosis; T-CBT, telephone-administered cognitive-behavioral therapy; T-SEFT, telephone-administered supportive emotion-focused therapy.

*Data are given as number (percentage) of each group unless otherwise indicated. Percentages may not total 100 because of rounding.

†Data are given as mean (SD).

COMMENT

Our finding that patients improved significantly and substantially across both telephone therapies is consistent with growing evidence showing the efficacy of telephone-administered psychotherapies.[21,22,53] This is particularly notable in this population, because depression among patients with MS has repeatedly been shown to remain unimproved in the absence of treatment.[54]

During treatment, T-CBT, compared with T-SEFT, produced significantly greater reductions in the frequency of MDD diagnosis and evaluator-rated severity of depressive symptoms and significantly greater increases in self-reported positive affect. Telephone-administered supportive emotion-focused therapy was a strong control treatment, because it included an equivalent number of sessions, used doctoral-level psychologists, provided equivalent therapist supervision, and was guided by manualized treatment that includes specific therapist procedures aimed at enhancing nonspecific components of therapy, including therapeutic alliance. Thus, these findings suggest that the specific cognitive-behavioral procedures provided in T-CBT produce improvements beyond other nonspecific factors in telephone-administered psychotherapy.

This finding is not entirely consistent with trials of face-to-face CBT. A recent meta-analysis of controlled trials of face-to-face CBT divided control treatments into "non–bona fide" treatments, which lack some of the essential components of psychotherapy (eg, relaxation training, which is generally applied in a uniform manner across patients), and "bona fide" treatments, which were defined as meeting several criteria, including therapists with doctorate degrees, treatment decisions being individualized to the patient (this includes a requirement for face-to-face meetings, which is not relevant in this study), and the use of a treatment manual.[55] While face-to-face CBT was superior to non–bona fide treatments, there was no significant advantage of CBT when the control treatment met the criteria for a bona fide treatment, as does T-SEFT. This suggests that cog-

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Table 2. Outcome Data by Week and Treatment Arm

Treatment Arm	Week	No. of Subjects	HDRS Total Score*	BDI-II Total Score*	Positive Affect Scale Score (PANAS)*	MDD Present†
T-CBT	0	62	21.35 (3.90)	27.00 (7.78)	21.44 (5.78)	45 (72.6)
	8	60	14.02 (6.36)	19.76 (9.28)	25.20 (6.94)	NA
	16	60	11.98 (5.86)	15.00 (10.83)	28.00 (8.43)	8 (13.3)
	28	56	11.61 (5.73)	13.56 (11.02)	NA	NA
	40	59	12.58 (6.43)	15.78 (10.30)	26.47 (8.17)	11 (18.6)
	52	58	11.95 (6.04)	15.80 (12.22)	NA	NA
	64	58	11.60 (5.91)	15.02 (9.79)	27.40 (8.63)	5 (8.6)
T-SEFT	0	64	21.66 (3.53)	28.32 (7.91)	22.78 (6.53)	44 (68.8)
	8	63	16.94 (6.03)	21.80 (9.39)	23.15 (6.79)	NA
	16	62	14.81 (6.66)	18.48 (10.28)	25.63 (8.07)	18 (29.0)
	28	56	13.61 (6.60)	17.68 (11.03)	NA	NA
	40	59	13.58 (5.91)	19.03 (10.76)	27.14 (6.97)	9 (15.3)
	52	59	12.41 (6.36)	16.48 (9.15)	NA	NA
	64	59	12.61 (5.86)	18.25 (9.90)	26.16 (6.74)	9 (15.3)

Abbreviations: BDI, Beck Depression Inventory; HDRS, Hamilton Depression Rating Scale; MDD, major depressive disorder; NA, data not available; PANAS, Positive and Negative Affect Scale; T-CBT, telephone-administered cognitive-behavioral therapy; T-SEFT, telephone-administered supportive emotion-focused therapy.
*Data are given as mean (SD).
†Data are given as number (percentage) of subjects.

Table 3. Outcomes for the HDRS, PANAS, and BDI

	Treatment*		Time			Time × Treatment Interaction		
Outcome	*t* Value	*P* Value > |*t*|	*t* Value	*df*	*P* Value > |*t*|	*t* Value	*df*	*P* Value > |*t*|
HDRS total score	−0.41	.68	−8.57	242	<.001	−2.37	242	.02
BDI-II total score	−0.91	.37	−7.57	240	<.001	−1.06	240	.29
Positive Affect scale score (PANAS)	−1.10	.27	2.60	239	.01	2.69	239	.008

Abbreviations: See Table 2.
*The *df* was 125 for all analyses.

Table 4. Outcomes for the SCID*

	Treatment			Baseline MDD	
Current MDD, wk	*z* Value	*P* Value > |*z*|	Baseline Week	*z* Value	*P* Value > |*z*|
16	−2.30	.02	0	0.85	.39
40	1.39	.16	16	2.69	.007
64	−0.13	.91	16	2.38	.02

Abbreviations: MDD, major depressive disorder; SCID, Structured Clinical Interview for *DSM-IV*.
*The *df* was 2 for all analyses.

nitive-behavioral skills training may be particularly suited to telephone-administered treatments, while treatment modalities that rely more heavily on other mediators of change (eg, therapeutic relationship) may be less suited to telephone administration.

To our knowledge, the 12-month follow-up in this study is the longest follow-up conducted in a trial of telephone-administered therapy. Treatment gains were maintained during the 12-month follow-up; however, the treatment differences evident during treatment disappeared during follow-up. These follow-up findings are similar to those found in trials of face-to-face psychotherapies, which often report that benefits are maintained over time, but that treatment differences are not maintained following treatment cessation.[56] There are at least 2 explanations for these findings, which are not mutually exclusive. The cognitive-behavioral skills taught in T-CBT may produce a more rapid response to treatment, which also occurs, albeit more slowly, in treatments that rely more heavily on the nonspecific effects of therapy, such as T-SEFT. It may also be that with the cessation of treatment, the use of cognitive-behavioral skills begins to decline, resulting in a convergence of levels of depression across randomized groups. Several potential solutions have been suggested to maintain gains in depression and use of skill, including adding booster sessions or spreading out the latter sessions over a longer period.[57,58]

The attrition rate across both treatments was 5.5%, which compares favorably with the rates of one third to

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one half observed in trials of face-to-face psychotherapies for depression.[12,13] A low attrition rate has been found in at least 1 other large controlled trial of a telephone-administered psychotherapy.[22] One potential explanation for these low attrition rates is that the use of the telephone may reduce barriers. This is particularly relevant to this sample of depressed MS patients, many of whom would have had difficulty attending weekly face-to-face appointments. This sample of MS patients had impairments that affected their ability to engage in social roles, as evidenced by the assessed functional impairment and the fact that 74% of the sample was not in the workforce. The use of telephone-administered therapies may also overcome various other barriers in the general population arising from transportation problems, lack of services in the area, child care problems, lack of time, and stigma.[14,15]

There are several limitations in these data, none of which invalidate the findings, but which should be considered in drawing inferences. While we saw significant time × treatment interaction effects in 3 of 4 of our measures, we did not see such an effect for BDI-II score. There are several possible explanations for this. One might argue that there was some unblinding of evaluators that led to biases in the interview assessments. However, another self-report, positive affect, also showed significant treatment differences, suggesting that differences across treatments could be detected by self-report measures. Furthermore, the high interrater reliabilities of the interview assessments would suggest that any such bias would have had to be similar across all 8 evaluators—something that is unlikely. Alternatively, several studies[59,60] have noted that the BDI-II score is less sensitive to change in clinical trials than the HDRS score, in part due to decreased sensitivity with repeated administrations. Finally, it may also be that these findings accurately reflect that the added benefit of T-CBT over T-SEFT is seen in evaluator-rated assessment of depression and self-reported positive affect, but not in self-reported depression.

Caution regarding generalizability should be maintained. This study was done with a sample of patients with MS and depression. This has the advantage of representing a disabled group for whom telemental health interventions can greatly improve access to care.[61] However, it is not clear that these findings would generalize to a broader group of patients without chronic illness or disability. For example, specific skills-training components of CBT may be effective at targeting potential causative factors unique to disabled individuals through improving symptom management (eg, fatigue) or reducing restrictions in fulfilling meaningful social roles.

We also caution that while these data are valid and reliable for populations, they should not suggest that T-CBT is indicated for all individual patients. Many individual patients showed good improvement with T-SEFT, and some patients did not show substantial response to T-CBT. As with face-to-face treatments, future research should focus on determining those individual patient characteristics that can be used for differential treatment prognoses. For example, patients who are less reactant may show stronger responses to more directive T-CBT–oriented treatments while more reactant patients may do better with less directive treatments, such as T-SEFT.[62,63]

To our knowledge, this is the third controlled trial that has pointed to the efficacy of T-CBT for the treatment of depression[21,22] and the first to use stringent controls for attention and nonspecific effects. There is growing evidence that telephone-administered psychotherapies are effective in treating depression. This study suggests that the inclusion of CBT skills-training components in psychotherapy may enhance outcomes during treatment. There is also growing evidence that T-CBT produces low levels of attrition. To overcome geographic and other barriers to treatment and to save costs, many health maintenance organizations and care-providing institutions are expanding telemental health services, such as telephone-administered psychotherapies.[64,65] At the same time, many mental health specialists remain skeptical of telephone-delivered psychotherapy.[64,66] To facilitate decisions about the benefits, risks, and utility of telephone-administered psychotherapies, it will be important to examine if the outcomes of telephone-administered therapies are equivalent to face-to-face interventions and if the apparent reductions in attrition associated with telephone administration of psychotherapy can be confirmed in such a comparative trial.

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