

Social Skills Training Augments the Effectiveness of Cognitive Behavioral Group Therapy for Social Anxiety Disorder

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Cognitive Behavioral Group Therapy (CBGT) is the most widely researched intervention program for social anxiety disorder (SAD, also known as social phobia), with a number of studies demonstrating its effectiveness. Another common treatment, social skills training (SST), has also been shown to be efficacious for SAD. The present study compared the standard CBGT intervention with a protocol in which SST was integrated into CBGT. Participants met diagnostic criteria for the generalized subtype of SAD, and most also met criteria for avoidant personality disorder and other comorbid Axis I disorders. The results revealed improvement in a variety of outcome measures for both treatments, but significantly greater gains for the CBGT plus SST condition. In fact, the effect sizes obtained for this treatment were among the largest found to date in any study of SAD. Clinical implications are discussed, and directions for future research are suggested.

AMONG THE MOST POPULAR TREATMENTS for social anxiety disorder (SAD) is cognitive behavioral group therapy (CBGT), developed by Heimberg and colleagues (Heimberg & Becker, 2002). CBGT is a structured, group-based intervention designed specifically for SAD in which cognitive restructuring is conducted within the context of simulated exposure exercises. This program is based on cognitive models of SAD, which highlight the role of cognitive biases and distortions in the etiology and maintenance of SAD (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997). CBGT is the most extensively researched psychotherapy for SAD to

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date, and is included on a list of empirically supported treatments (Chambless & Ollendick, 2001). A number of studies from several different laboratories support the efficacy of CBGT (Chambless, Tran, & Glass, 1997; Hope, Herbert, & White, 1995; Woody & Adessky, 2002), as well as variations on the program such as individual cognitive behavior therapy (Herbert, Rheingold, Gaudiano, & Myers, 2004). The program is more effective than psychoeducation (Heimberg et al., 1990), and comparably effective to the monoamine oxidase inhibitor, phenelzine, at posttreatment (Heimberg et al., 1998), and more effective than phenelzine at maintaining treatment gains during a treatment-free follow-up (Liebowitz et al., 1999).

Despite these results, CBGT does not produce improvement in all patients, and even among those who do respond, most remain at least somewhat symptomatic following treatment. This is especially true among patients with the generalized subtype of SAD, whose fear and avoidance is not limited to one or two discrete situations but instead involves most social situations. For example, in a study of end-state functioning following behavioral treatment of SAD, Turner, Beidel, and Wolff (1994) found that 100% of patients with specific SAD achieved at least moderate end-state functioning, relative to only 33% of those with the generalized subtype. Similarly, Hope et al. (1995) found that 67% of nongeneralized patients were rated by independent evaluators as fully remitted following a course of CBGT, relative to only 18% of patients with the generalized subtype. These findings were replicated by Brown, Heimberg, and Juster (1995), who found that 79% of nongeneralized patients were classified as treatment responders following CBGT, relative to 44% of those with generalized SAD. These studies all support the conclusion that only a minority of patients with generalized SAD respond fully to current CBGT treatment programs, thereby highlighting the importance of targeting this group in future treatment development

efforts. Moreover, generalized SAD is associated with high levels of subjective distress and functional impairment, and is frequently comorbid with avoidant personality disorder (Herbert, Hope, & Bellack, 1992). The present study therefore focused exclusively on individuals with the generalized subtype of SAD.

The limited response of patients with generalized SAD raises the question of whether the addition of other treatment components to the standard CBGT protocol might improve effectiveness. One possibility is combination treatment, in which CBGT is supplemented by pharmacotherapy. Two large-scale studies have recently been completed in which CBGT was combined with drug therapy (Davidson et al., 2003; Heimberg, 2002). Although the results of neither study have yet been published, preliminary reports from both confirm the effectiveness of phenelzine, fluoxetine, and CBGT for SAD, but suggest little if any incremental benefits of combined treatment (Heimberg, 2002; Huppert, Roth, Keefe, Davidson, & Foa, 2002). One other study suggests that combined treatment may actually fare *worse* than exposure therapy alone for SAD in the long term. Haug et al. (2003) found that patients who received exposure alone continued to improve over the course of a 28-week follow-up period, whereas deterioration was noted for those who received either sertraline alone, or sertraline plus exposure.

Another possibility for enhancing the efficacy of CBGT is to incorporate components of other psychotherapies. One such component might be social skills training (SST). Over the past three decades, SST has demonstrated efficacy for various forms of psychopathology, including schizophrenia and other severe mental illness (Dilk & Bond, 1996; Liberman, DeRisi, & Mueser, 1989), depression (Hersen, Bellack, Himmelhoch, & Thase, 1984; Jacobson et al., 1996), and social anxiety (Trower, Yardley, Bryant, & Shaw, 1978). Several studies have also found SST to be effective for SAD, either as a stand-alone intervention (Mersch, Emmelkamp, Bogels, & Van der Sleen, 1989; Stravynski, Marks, & Yule, 1982; Wlazlo, Schroeder-Hartwig, Hand, Kaiser, & Münchau, 1990) or as part of a multicomponent treatment package that integrates SST with exposure (Turner, Beidel, Cooley-Quille, 1995; Turner, Beidel, Cooley, Woody, & Messer, 1994; van Dam-Baggen & Kraaimaat, 2000). Little research has examined the integration of SST with CBGT. In an uncontrolled pilot study, Herbert, Rheingold, and Goldstein (2002) found promising results of a brief, 6-week treatment protocol that integrated SST with cognitive restructuring and simulated exposure delivered in an individual for-

mat. In another uncontrolled pilot study, Franklin, Feeny, Abramowitz, Zoellner, and Bux (2001) reported promising results of a 14-week program integrating SST and cognitive restructuring.

The rationale for SST for SAD is that the disorder is associated with deficits in social performance, which may reflect actual skills deficits (i.e., the incapacity to perform at an adequate level in certain social contexts), at least in some individuals. Several studies have explored this issue by examining the social behavior of persons with SAD. The general finding is that global ratings of the behavior of persons with SAD in contrived social situations are rated as poorer relative to both clinical and nonclinical control groups (Baker & Edelman, 2002; Fydrich, Chambless, Perry, Buerger, & Beazley, 1998; Hopko, McNeil, Zvolensky, & Eifert, 2001; Norton & Hope, 2001b; Stopa & Clark, 1993; but see also Rapee & Lim, 1992, for conflicting results). Although there is a general consensus that the social behavior of persons with SAD is frequently impaired, several authors have noted that such impairments do not necessarily reflect underlying skills deficits (e.g., Bellack, 1983; Heimberg & Becker, 2002; Herbert, 1995; Norton & Hope, 2001a). Although it is possible that impaired social behavior does indeed reflect skills deficits, it is equally possible that such performance problems reflect other processes, such as the disruptive effects of anxiety (Rapee, 1995) or the effects of safety behaviors (Alden & Bieling, 1998; Clark & Wells, 1995). In a recent review of this area, Hopko et al. (2001) note that the etiology of impaired social performance in SAD likely differs across individuals. Some with SAD may have the capacity for adequate performance while the ability to exercise that capacity is impaired by anxiety, others may lack the capacity to perform effectively, while still others may have both skills deficits and excessive anxiety. This high degree of variability in the social behavior of persons with SAD suggests that interventions directly targeting social skills might be especially helpful for patients with some level of impaired social performance. With respect to the integration of SST within CBGT, this variability highlights the importance of a flexible protocol, in which the degree of focus on SST can be tailored to the degree of each patient's impairment.

Although the specific nature of the impairments in social behavior associated with SAD remains unresolved, this issue is actually independent of questions regarding the clinical efficacy of SST. Traditional conceptualizations of SST are generally based on the idea that the intervention corrects underlying skills deficits. However, SST may also produce beneficial effects for individuals with signifi-

cant social performance problems that do not reflect skills deficits. In such cases, the effects of SST may be due to other psychological processes, such as increasing self-efficacy for social situations (Gaudio & Herbert, 2003) or anxiety reduction through exposure.

The purpose of the present study was to evaluate the effectiveness of integrating SST into CBGT for SAD. Participants with generalized SAD were randomly assigned to standard CBGT, or CBGT in which SST was integrated into the treatment protocol. Both groups were provided the same overall quantity of treatment. We hypothesized that the modified CBGT program enriched by SST would produce greater treatment effects than the standard CBGT program.

Method

PARTICIPANTS

Participants included 65 individuals recruited through various community media (e.g., newspaper advertisements and articles, flyers posted in public libraries and coffee shops) to participate in a treatment study through an anxiety clinic in an urban health sciences university. Overall, the sample consisted of a fairly well-educated, mostly employed group of Caucasian and African-American individuals, half of whom had a comorbid mood or anxiety disorder. See Table 1 for demographic characteristics for the total sample as well as for each treatment group.

Approximately half of the sample (55.4%) had a secondary diagnosis, with the most prevalent being major depressive disorder (29.2%). Other secondary comorbid diagnoses included generalized anxiety disorder (16.9%), dysthymic disorder (10.8%), panic disorder (3.1%), specific phobia (4.6%), depression not otherwise specified (4.6%), eating disorders (4.6%), and bipolar disorder (1.5%). Forty-nine of the 65 participants (75%) met criteria for avoidant personality disorder. The frequency of comorbid disorders was similar to that found in prior studies (e.g., Herbert et al., 2002, 2004; Hope et al., 1995; Kessler, Stang, Wittchen, Stein, & Walters, 1999; Perugi et al., 2001). Fifteen participants across the two treatment conditions (23% of the total sample) were stabilized on a psychotropic medication when they initiated treatment (6 [20%] in CBGT and 9 [25.7%] in CBGT plus SST).¹

¹Medication stabilization was defined as being continuously maintained on a given dose of medication for at least 3 months with no improvement in symptoms. Physicians of all patients on medications were contacted, and agreed to their patient's participation in the program and to maintain the current medication regimen throughout treatment. Medication status was assessed weekly by study therapists to ensure no changes throughout the course of treatment.

TABLE 1 Means and Frequencies for Demographic Characteristics

	Total Participants (<i>n</i> = 65) <i>n</i> (%)	CBGT + SST Group (<i>n</i> = 35) <i>n</i> (%)	CBGT Only Group (<i>n</i> = 30) <i>n</i> (%)
Age	<i>M</i> = 33.7 <i>SD</i> = 10.8	<i>M</i> = 34.9 <i>SD</i> = 10.9	<i>M</i> = 32.1 <i>SD</i> = 10.6
Gender			
Male	28 (43)	15 (43)	13 (43)
Female	37 (57)	20 (57)	17 (57)
Race			
Caucasian	42 (65)	21 (60)	21 (70)
African American	15 (23)	11 (31)	4 (13)
Hispanic	1 (2)	1 (3)	0 (0)
Asian	5 (8)	0 (0)	5 (17)
Other	2 (3)	2 (6)	0 (0)
Relationship status			
Single	42 (65)	23 (66)	19 (63)
Married	16 (25)	9 (26)	7 (23)
Divorced	2 (3)	1 (3)	1 (3)
Separated	5 (7)	2 (6)	3 (10)
Employment status			
Working full-time	35 (54)	19 (54)	16 (53)
Working part-time	10 (15)	7 (20)	3 (10)
Student	8 (12)	4 (11)	4 (13)
Unemployed	10 (15)	5 (14)	5 (17)
Missing	2 (3)	0 (0)	2 (7)
Education			
Some high school	3 (5)	3 (9)	0 (0)
High school degree	7 (11)	3 (9)	4 (13)
Some college	23 (35)	14 (40)	9 (30)
College degree	16 (25)	9 (26)	7 (23)
Graduate or professional school	14 (21)	6 (17)	8 (27)
Missing	2 (3)	0 (0)	2 (7)

Note. CBGT = Cognitive Behavior Group Therapy; SST = Social Skills Training.

DIAGNOSTIC ASSESSMENT PROCEDURE

Potential participants inquired about the study via telephone and underwent an initial 20-minute structured telephone screening. Those who reported significant distress and/or impairment in functioning, who appeared to meet other study inclusion criteria, and who were interested in participating in the study were invited for an evaluation with a trained diagnostician using the Structured Clinical Interview for *DSM-IV* Axis I Disorders (SCID-IP; First, Spitzer, Gibbon, & Williams, 1996) as well as the social phobia section of the Anxiety Disorder Interview Schedule for *DSM-IV* (Brown, Di Nardo, & Barlow, 1994). In addition, the avoidant personality disorder section of Structured Clinical Interview for *DSM-IV* Personality Disorders (SCID-II; First, Spitzer, Gibbon, Williams, & Benjamin,

1994) was administered.² Diagnosticians, all of whom were doctoral candidates in clinical psychology, were extensively trained in the administration of the instruments via didactic instruction, role-plays, observation, and practice ratings of patient videotapes. In the event of diagnostic uncertainty, the case was discussed in a team meeting to achieve consensus. All diagnoses were confirmed through review of the diagnostic data by the first author. All participants met criteria for a primary diagnosis of the generalized subtype of SAD according to the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994). Generalized subtype was operationally defined as significant fear and avoidance in three or more social situations.

Due to the high comorbidity of other Axis I disorders with SAD, participants with secondary comorbid Axis I disorders were included to enhance external validity. When a comorbid Axis I disorder was present, SAD was judged to be primary (i.e., with earlier onset and greater severity). Exclusion criteria included under age 18 or over age 65, a history of mental retardation, pervasive developmental disorder, organic mental disorder, current substance dependence (within the past 6 months), acute suicide potential, or an untreated medical condition that might confuse the diagnosis of an anxiety disorder. Since the purpose of the study was not to evaluate the effects of cognitive-behavioral treatment among patients known to be unresponsive to such interventions, a previous trial of behavior or cognitive behavior therapy for SAD was an additional exclusion criterion. A total of 136 persons underwent the telephone screening interview. Of these, 43 were excluded. Five did not meet full criteria for SAD, 3 met criteria for the discrete subtype of SAD, 27 were assigned a different primary diagnosis, 2 had recently begun medications, 5 had a history of prior CBT for SAD, and 1 person was over the study age criterion. Ninety-three participants underwent the diagnostic interview, of whom 28 did not meet study inclusion criteria. Of these 28 participants, 18 (64.3%) had a primary diagnosis other than SAD. In addition, 4 (14.3%) did not meet criteria for SAD, 3 (10.7%) met current criteria for substance abuse or dependence, 2 (7.1%) met criteria for panic disorder, and 1 participant (3.6%) met criteria for the specific subtype of SAD. Therefore, a total of 65 individuals were entered into the study.

² Both the SCID-I/P and the ADIS have been found to be reliable structured clinical interviews for a wide range of Axis I disorders (DiNardo, Moras, Barlow, Rapee, & Brown, 1993; Ventura, Liberman, Green, Shaner, & Mintz, 1998).

MEASURES

Pre- and posttreatment assessments included numerous self-report questionnaires, as well as videotaped behavioral assessment tasks. No physiological measures were included. All self-report measures were well established and widely used in studies of SAD. Observers who were blind to assessment occasion and group assignment completed ratings of various social performance indices derived from the behavioral tasks. Follow-up self-report measures were collected via mail 3 months following termination of treatment.

Social Phobia Anxiety Inventory (SPAI). The SPAI (Turner, Beidel, Dancu, & Stanley, 1989) is an empirically derived, 45-item scale that assesses the clinical features of SAD. The 32-item Social Phobia subscale of the SPAI (SPAI-SP) was used in this study because this subscale seems to be a better index of social anxiety symptoms than the difference subscale score (Herbert, Bellack, & Hope, 1991; Ries et al., 1998). The SPAI has good test-retest reliability ($r = .86$ over 2 weeks; Turner et al., 1989), internal consistency (Cronbach's alphas = .94 to .96; Osman et al., 1996), and concurrent and external validity (Beidel, Turner, Stanley, & Dancu, 1989; Osman et al., 1998; Turner et al., 1989). The SPAI also was better able to distinguish SAD from panic disorder with and without agoraphobia relative to other self-report social anxiety measures (Peters, 2000). Several studies have shown that the SPAI is sensitive to treatment effects (e.g., Beidel, Turner, & Cooley, 1993; Herbert et al., 2002, 2004; Hofmann, 2000; Ries et al., 1998).

Fear Questionnaire (FQ). The FQ (Marks & Mathews, 1979) is a 15-item scale assessing avoidance behaviors associated with social situations, agoraphobia, and blood/injury phobia. The 5-item social phobia subscale was used. The FQ demonstrates high test-retest reliability, good internal consistency, and good discriminant validity (Cox, Parker, & Swinson, 1996; Cox, Swinson, & Parker, 1993; Cox, Swinson, & Shaw, 1991; Michelson & Mavissakalian, 1983; Oei, Moylan, & Evans, 1991).

Brief Version of the Fear of Negative Evaluation Scale (Brief FNE). The Brief FNE (Leary, 1983) is a 12-item measure designed to assess concerns over negative interpersonal evaluations, based upon the original 30 items from the FNE. The Brief FNE uses a 5-point Likert scale (ranging from *not at all* to *extremely characteristic of me*) to assess levels of apprehension and expectation of evaluative situations. The Brief FNE correlated very highly ($r = .96$, $p < .001$) with the original FNE and demonstrated good test-retest reliability and internal consistency (Leary, 1983), and good concurrent validity

with other measures of social anxiety (Saluck, Herbert, Rheingold, & Harwell, 2000).

Beck Depression Inventory (BDI). The BDI (Beck & Steer, 1987) is a 21-item inventory assessing symptoms of depression over the past week. The BDI is the most widely used self-report measure of depression, and is supported by an extensive psychometric literature (see Beck, Steer, & Garbin, 1988, for a review).

Sheehan Disability Scale (SDS). The SDS (Sheehan, 1986) is a self-report measure assessing impairment of psychiatric illness (Leon, Olfson, Portera, Farber, & Sheehan, 1997). The degree of disruption caused by symptoms is rated on a 10-point Likert scale across three domains: work, social/leisure activities, and family/home life. The instrument has adequate reliability, construct validity, and criterion-related validity in patients with panic disorder (Leon, Shear, Portera, & Klerman, 1992).

Behavioral assessment. Three standardized 3-minute behavioral tasks were administered for assessment of behavioral performance. They included (a) a dyadic role-play involving a simulated interaction with a confederate; (b) a triadic role-play involving an interaction with two confederates; and (c) an impromptu speech.³ The first author reviewed the videotapes of all behavioral assessments to ensure standardization.

Role-play tests are commonly used in the behavioral assessment of social anxiety (Glass & Arnkoff, 1989; Herbert, Rheingold & Brandsma, 2001; McNeil, Ries, & Turk, 1995), with sufficient reliability and validity for social performance ratings (Arkowitz, Lichtenstein, McGovern, & Hines, 1975; Beidel, Turner, Jacob, & Cooley, 1989; Merluzzi & Biever, 1987). For this study, the role-play interactions and the impromptu speech were videotaped and rated by two trained observers on quality of verbal content, nonverbal content, paralinguistic features, and overall social performance using 5-point Likert scales. The observers were blind to assessment time point and treatment condition. Prior to rating tapes, assessors developed anchors for ratings and were trained until a reliability of greater than .80 was achieved. Calculated agreement between raters was high (intraclass correlation $\alpha = .96$) based on reliability checks between the raters on a random sample of 30% of the tapes. Immedi-

³ Role-players for the social interaction tasks, all of whom were female, were trained to behave in a natural but reserved manner, thereby placing the primary burden for maintaining the conversation on the patient, and to avoid providing feedback (e.g., smiling, head nods). The role-players practiced enacting their roles as confederates through exercises in which a study therapist played the patient role until an acceptable criterion of performance was achieved.

ately following each role-play task, participants were asked to provide a single self-rating of their overall performance using the same 5-point Likert scale.

Subjective Units of Discomfort Scale (SUDS). Immediately prior to each of the behavioral assessment tasks, participants were asked to provide a rating of anxiety on a 0-to-100 SUDS, with higher numbers indicating increased anxiety (Wolpe & Lazarus, 1966). Immediately following each task participants were asked to rate their level of anxiety at that time, as well as their highest level of anxiety during the task. The observers provided a subjective rating of participants' expressed anxiety for each behavioral assessment task. Reliability of SUDS self-reports of anxiety during a BAT impromptu speech has been shown to be adequate (Beidel, Turner, Jacob, et al., 1989).

TREATMENT

Participants were randomly assigned to 12 sessions of CBGT with or without SST. Groups met on a weekly basis for 2 hours.⁴ Each group was comprised of four to six participants, and was co-led by two advanced doctoral candidates in clinical psychology, supervised by the first author, who is a licensed clinical psychologist with substantial experience in the cognitive-behavioral treatment of SAD. A total of 10 therapists conducted treatment groups, and all therapists ran an equal number of groups in each condition, thereby controlling for any specific therapist effects. Therapists received weekly individual and group supervision for quality assurance and to ensure adherence to the treatment manuals. The treatment protocol was adapted from the treatment program developed by Heimberg and colleagues (Heimberg, 1991; Heimberg & Becker, 2002). The SST component was comprised of individualized identification of specific performance impairments, education, modeling of specific behaviors, practicing the skill in session during simulated exposure exercises, provision of feedback, and practicing the skill outside of the session. The psychoeducational component of SST included teaching participants about three expressive domains of social skills: (a) speech content, (b) paralinguistic features of speech (e.g., voice volume, tone, timing), and (c) nonverbal behavior (e.g., proxemics, kinesics, eye contact, facial expressions). In addition, education was provided on applying these elements in various contexts, including initiating, maintaining, and ending conversations, and assertiveness. A specific target behavior in a spe-

⁴ This number and length of treatment sessions is typical of studies of CBGT (e.g., Heimberg et al., 1990, 1998; Hope et al., 1995).

sific context was chosen by the therapist for each participant to practice during exposure exercises. Before each skill was practiced, the therapist described the targeted skill, provided a rationale for its use, instructed participants on how to carry out the skill, and modeled the behavior. Participants were provided with veridical feedback and positive reinforcement following each role-play. Weekly homework was assigned to practice the social skill that was reviewed in session. The SST component was fully integrated into the cognitive restructuring and simulated exposure exercises that form the basis of the standard CBGT protocol. Moreover, the overall amount of simulated exposure exercises was held constant across the two treatment conditions. In order to create time for the added SST component in the modified CBGT protocol, slightly less time was spent with the cognitive restructuring component before and following each simulated exposure exercise. Thus, although patients in each condition were equated with respect to the number and duration of simulated exposure exercises, and although each exposure was preceded and followed by cognitive restructuring, the amount of time devoted to cognitive restructuring was reduced by approximately 5 min per exposure to make time for SST. Similarly, the amount of time devoted to explaining cognitive restructuring during the second treatment session was reduced slightly in the modified CBGT protocol in order to create time to present an overview of the SST treatment component. Nevertheless, it is noteworthy that even in the modified CBGT protocol, more time continued to be devoted to cognitive restructuring than to SST, both in the psychoeducation stages of the program and in each simulated exposure exercise.

Results

TREATMENT INTEGRITY

Two Treatment Integrity Forms (TIFs), were designed for this study to assess the degree of adherence to the treatment manuals. Each TIF contained a list of 5 to 8 components to be covered or not covered per session. A trained doctoral candidate in clinical psychology completed the TIF by recording whether or not a component was covered. Percentages were calculated to determine the degree of adherence to the manuals. Ratings were made on a random sample of audiotapes from the sessions stratified by session (early, middle, late) and condition (SST vs. no SST). Prior to conducting the ratings, the adherence rater practiced making ratings of sample sessions from pilot patients until 100% agreement with the first author was achieved. Approximately 38% of sessions were rated (46 out of

120). For the no-SST condition, there was 100% fidelity to the manual. For the SST condition, there was 99% fidelity.

PRELIMINARY ANALYSES

Dropouts. Nine participants dropped out of the no-SST group and 11 participants dropped out of the SST group. Dropouts were defined as those who either discontinued the group or who missed more than 3 treatment sessions. A chi-square test indicated no significant difference in dropout rate between the groups, $p = ns$. No significant differences were found between those who dropped out versus completers on the demographic variables of marital status, race, or education (all $ps = ns$). However, a significant difference in dropout rate was observed for gender, with 14 female as compared to 5 male participants dropping out of the study, $\chi^2(1, 19) = 19.00, p < .001$. Also, an independent samples t test showed a significant difference between dropouts and completers on age, with completers ($M = 35.74; SD = 10.58$) being older than dropouts ($M = 29.44; SD = 10.26$), $t(59) = 2.14, p < .05$.

Treatment groups. Participants assigned to CBGT and CBGT plus SST were compared on two pretreatment diagnostic severity ratings: a clinician rating of symptom severity in the SAD section of the SCID-IP, and a Clinical Global Impression severity rating (Guy, 1976). T tests by treatment groups were not significant ($ps = ns$). Chi-square tests demonstrated no significant group differences on gender, marital status, race, education, presence of comorbid Axis I and II disorders. Independent samples t tests also showed no differences in the number of participants currently taking psychotropic medication, the number with a history of medication use, age, or any pretest self-report measure (all $ps = ns$). However, t tests revealed marginally significant differences on the SPAI-Social Phobia Subscale and the Brief FNE, with the SST group having slightly higher mean pretest scores on those measures. Therefore, pretest scores for each measure were used as covariates in the main analyses according to recommendations by Behar and Borkovec (2003). Table 2 depicts the descriptive statistics calculated using raw scores (before covariate analyses) for both groups at each assessment point.

SELF-REPORT MEASURES

Completer-only analyses. A repeated-measures multivariate analysis of covariance (MANCOVA) was computed on the self-report measures for the 43 participants (SST group $n = 23$; non-SST group $n = 20$) with sufficient data who completed treatment. The MANCOVA examined two assessment

TABLE 2 Means (Standard Deviations) of Self-Report Measures for Completers Only and Intent-to-Treat

Measure	Completers Only		Intent-to-Treat	
	CBGT + SST (n = 25)	CBGT (n = 20)	CBGT + SST (n = 35)	CBGT (n = 30)
SPAI-SP				
Pretest	147.4 (17.9)	136.4 (24.1)	142.7 (25.6)	134.4 (25.5)
Posttest	106.1 (25.0)	116.6 (37.8)	113.1 (31.5)	120.6 (35.5)
Follow-up	100.0 (28.6)	106.2 (36.0)	112.3 (35.5)	116.1 (35.7)
FQ-SP				
Pretest	22.1 (7.3)	19.5 (8.0)	21.6 (7.5)	18.9 (8.1)
Posttest	13.4 (7.1)	17.1 (9.5)	15.7 (8.0)	17.2 (9.1)
Follow-up	12.9 (6.7)	16.9 (8.0)	16.0 (8.6)	17.3 (8.0)
Brief FNE				
Pretest	50.2 (7.7)	45.7 (9.3)	48.4 (8.7)	45.8 (8.9)
Posttest	39.4 (8.7)	40.9 (11.1)	41.1 (9.2)	42.2 (10.7)
Follow-up	38.3 (9.6)	39.1 (12.7)	40.9 (10.1)	42.0 (12.2)
BDI				
Pretest	13.0 (7.7)	14.4 (9.9)	14.1 (9.8)	15.2 (9.2)
Posttest	5.3 (6.0)	9.8 (8.4)	8.9 (10.2)	12.0 (8.6)
Follow-up	7.3 (8.0)	8.6 (7.5)	9.7 (10.8)	12.2 (8.5)
SDS				
Pretest	18.8 (5.7)	17.8 (4.8)	19.4 (6.5)	17.9 (4.8)
Posttest	10.9 (4.7)	14.8 (7.8)	14.2 (7.5)	15.8 (7.1)
Follow-up	11.6 (5.1)	13.5 (6.4)	14.5 (7.6)	15.4 (7.1)

Note. SPAI-SP = Social Phobia and Anxiety Inventory-Social Phobia Subscale; FQ-SP = Fear Questionnaire-Social Phobia Subscale; Brief FNE = Brief Version of the Fear of Negative Evaluation Scale; BDI = Beck Depression Inventory; SDS = Sheehan Disability Scale; CBGT = Cognitive Behavior Group Therapy; SST = Social Skills Training; Follow-up = 3 months posttest. Means and standard deviations depicted above based on unadjusted raw scores.

occasions (posttreatment and 3-month follow-up) with pretest scores used as covariates. Missing follow-up data for completers were replaced with the group mean at that time point. The SPAI-SP, FQ-Social Phobia Subscale (FQ-SP), and Brief FNE were used as the dependent variables in the analyses. The MANCOVA group main effect was significant [Wilks's λ (3, 36) = .79, $F = 3.27$, $p < .05$]. The time main effect and interaction were not significant, $ps = ns$.

Follow-up univariate analyses of covariance (ANCOVAs) were conducted for each measure. Significant group main effects were found for the SPAI-SP, $F(1, 38) = 4.59$, $p < .05$, and FQ-Soc, $F(1, 38) = 9.43$, $p < .01$. A marginally significant group main effect was found for the Brief FNE, $F(1, 38) = 3.80$, $p = .059$. Tukey's post hoc tests revealed that the SST group had significantly lower scores (i.e., less symptoms of social anxiety) compared to the no-SST group on the SPAI-SP, FQ-SP, and Brief FNE at posttreatment and 3-month follow-up (all $ps < .05$). Effect sizes (ES) for the

SPAI-SP were calculated according to Cohen's d statistic⁵ (Cohen, 1988). Pre- to posttreatment ds were .61 and 1.94 for the CBGT and CBGT plus SST conditions, respectively. Pre- to follow-up ds were .95 and 2.00 for CBGT and CBGT plus SST, respectively. This yields a difference in ESs between the two conditions of .81 at posttreatment and .45 at follow-up, in both cases favoring the CBGT plus SST condition. Figure 1 depicts the SPAI-SP *adjusted* group means at each time point for completer-only data.

A separate ANCOVA was conducted on the BDI scores at posttreatment and 3-month follow-up, using pretest scores as the covariate (SST group $n = 21$; no SST $n = 24$). A marginally significant group main effect was found, $F(1, 42) = 3.79$, $p = .058$. No significant time main effect or interaction was found ($ps = ns$). Tukey's post hoc tests showed that the SST group had significantly lower scores than the no-SST group at posttreatment and at 3-month follow-up ($ps < .05$).

In addition, a separate ANCOVA was conducted on the SDS at posttreatment and 3-month follow-up. A significant group main effect was found, $F(1, 40) = 5.54$, $p < .05$. No significant time main effect or interaction was found ($ps = ns$). Tukey's post hoc tests revealed that the SST group had significantly lower scores than the no-SST group at posttreatment ($p < .05$) but not at 3-month follow-up ($p = ns$), although the trend again favored the SST group. In summary, completer analyses revealed significant differences between the groups favoring the SST condition on all three self-report measures at posttreatment and at follow-up.

Intent-to-treat analyses. The dropout rate in the SST and non-SST groups was 31% and 30%, respectively. Because the treatment was delivered in a group format, there was little flexibility in rescheduling sessions missed and some participants were unable to attend the designated number of sessions. Therefore, intent-to-treat (ITT) analyses also were conducted to aid in the interpretation of findings by including all those who started treatment but dropped out. An end-point analysis or last-observation-carried-forward strategy was used for missing data.

ITT analyses conducted on the same measures showed similar results (no SST $n = 30$; SST $n = 35$). Because the results are largely redundant with the completer-only analyses, they will only be summarized briefly. ITT results indicated a significant group main effect on the SPAI-SP and FQ-SP but not the Brief FNE. A marginally significant differ-

⁵ Cohen's (1988) d statistic:

$$(M_1 - M_2) / SD_{\text{pooled}}, \text{ where } SD_{\text{pooled}} = [\sqrt{(SD_{\text{pre}}^2 + SD_{\text{post}}^2) / 2}].$$

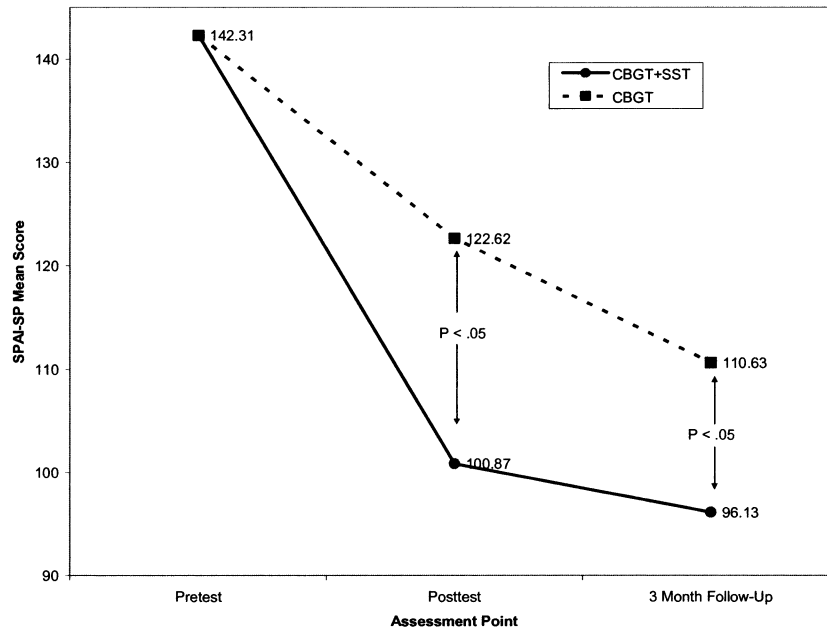


FIGURE 1 SPAI-SP Scores by Condition for Treatment Completers. SPAI-SP = Social Phobia and Anxiety Inventory-Social Phobia Subscale; CBGT = Cognitive Behavior Group Therapy; SST = Social Skills Training.

ence was found between the groups on the SDS but not the BDI. Significant differences and trends were consistent with the pattern found for completer-only analyses, with the SST condition consistently showing greater improvements by post-treatment and 3-month follow-up relative to the no-SST condition.

BEHAVIORAL ASSESSMENTS

Table 3 contains the means and standard deviations for completers only on the behavioral assessment measures. Because results using self-report measures did not differ between completer-only and ITT analyses, only completer analyses were conducted on the behavioral assessment data to reduce Type I error. Separate univariate ANCOVAs were computed on average self-ratings of performance and average SUDS ratings across the three role-plays. As behavioral assessments were conducted at pretreatment and posttreatment only, pretreatment scores served as covariates and the posttreatment scores as dependent variables. No significant differences were found between the groups (all *ps* = *ns*).

MANCOVA was computed on the observers' social performance ratings for the 44 participants (SST group *n* = 24; non-SST group *n* = 20). Again, the MANCOVA examined posttreatment scores with pretest scores used as covariates. Scores for verbal, nonverbal, paralinguistic, and overall social performance ratings were combined and averaged

to derive a total social behavior score for each of the three role-play tasks that comprised the behavioral assessment. Observer-rated anxiety levels of participants were combined for the three role-plays and averaged to obtain a total score. The following dependent variables were used in the analyses: social behavior role-play 1 (AveSB1), social behavior role-play 2 (AveSB2), social behavior role-play 3 (AveSB3), and average observer-rated SUDS for

TABLE 3 Means (Standard Deviations) of Behavioral Assessment Measures for Completers Only

Measure	CBGT		CBGT + SST	
	Pre	Post	Pre	Post
Observer social				
Skills ratings				
Role Play 1	2.1 (0.5)	2.7 (0.7)	2.4 (0.6)	3.3 (0.8)
Role Play 2	2.2 (0.7)	2.6 (0.7)	2.6 (0.6)	3.3 (0.8)
Role Play 3	2.4 (0.8)	3.0 (0.7)	3.0 (0.7)	3.6 (0.6)
Average* SUDS				
Observer-rated	62.9 (13.1)	48.0 (11.8)	52.2 (12.9)	41.8 (12.3)
Participant-rated	56.3 (16.7)	44.7 (19.5)	57.3 (21.1)	52.0 (16.1)
Average* participant self-ratings of performance	2.1 (0.9)	3.2 (0.7)	2.3 (1.0)	3.4 (0.7)

Note. CBGT = Cognitive Behavior Group Therapy; SST = Social Skills Training; SUDS = Subjective Units of Distress Scale. Means and standard deviations depicted above based on unadjusted raw scores.
* Average computed across the three role-plays.

the three role-plays (AveSUDS). The MANCOVA group main effect was significant, Wilks's $\lambda(4, 35) = .74, F = 3.11, p < .05$.

Follow-up analyses of covariance (ANCOVAs) were conducted for each measure. Significant group main effects were found for the AveSB1, $F(1, 38) = 4.82, p < .05$. Marginally significant group main effects were found for the AveSB2, $F(1, 38) = 3.44, p = .07$, and AveSB3, $F(1, 38) = 3.89, p = .056$. No significant group main effect was found for the AveSUDS, $p = ns$. In each case, the SST group showed greater improvement on observer ratings of social behavior than the non-SST group.

TREATMENT RESPONDERS

Responder status was determined by tallying the number of participants in each group who completed treatment and achieved an improvement of at least one standard deviation unit based on their pretest SPAI-SP score (see Figure 2). Chi-square tests indicated a significantly higher percentage of responders in the SST condition (79%) compared to the non-SST condition (38%), $\chi^2 = 7.87, p < .01$. No significant differences were found between the groups at 3-month follow-up ($p = ns$), although the trend continued to favor the SST group.

MAGNITUDE OF EFFECTS RELATIVE TO OTHER STUDIES

In order to contextualize these findings, it is helpful to compare how the SPAI-SP scores in this study

compare to those reported elsewhere in the literature. The present pretreatment mean SPAI-SP across all participants ($n = 65$) of 139.40 is higher than most studies, in which mean scores ranged from 107.5 (Turner, Beidel, & Jacob, 1994) to 128.5 (Cox et al., 1998). Nevertheless, the post-treatment SPAI-SP scores of patients who received the CBGT + SST treatment were comparable to the posttreatment scores of most other trials (e.g., 106.90 in the present study vs. 110.02 for Cox et al.). Finally, it should be noted that the posttreatment SPAI-SP scores reported here, despite being substantially reduced, nevertheless continued to fall well above the mean of nonclinical samples. For example, Gillis, Haaga, and Ford (1995) reported mean SPAI-SP scores of 68.1 for Caucasians and 50.4 for African Americans in a large community sample representative of the U.S. population. Similarly, Osman et al. (1995) reported a mean of 82.71 ($SD = 26.13$) in an undergraduate sample.

Discussion

The pattern of results across various measures was clear: Participants who received treatment in which SST was integrated into the CBGT protocol fared significantly better than those who received the standard CBGT protocol. This difference cannot be explained by differences in the quantity of treatment received, as both groups received the same number of sessions of equivalent duration. Moreover, the same therapists delivered both treatments,

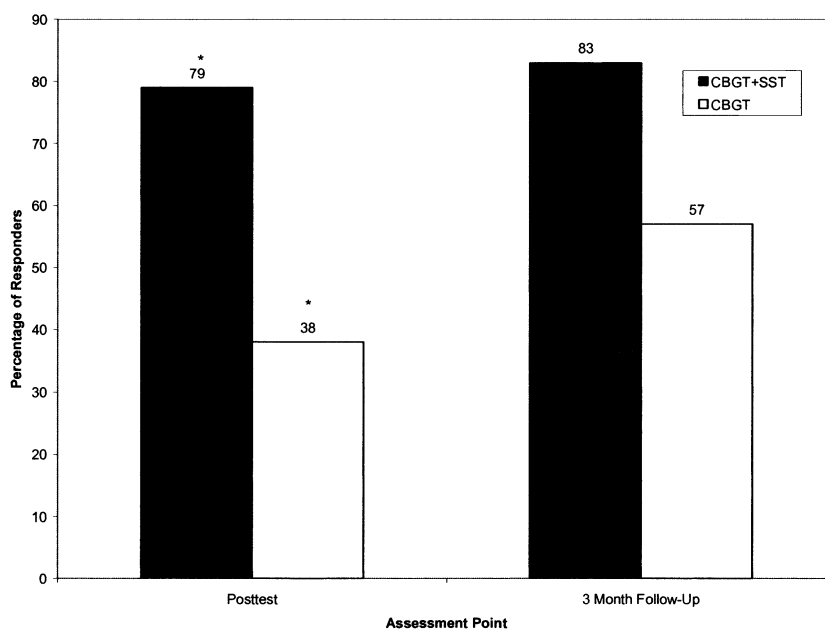


FIGURE 2 Percentage of Treatment Responders by Condition at Posttreatment and Follow-Up. * $p < .05$; CBGT = Cognitive Behavior Group Therapy; SST = Social Skills Training.

precluding unique therapist effects accounting for the observed differences. Furthermore, this difference appears to be clinically meaningful, as the effect size differences between the groups at post-treatment and follow-up were in the “large” and “moderate” range, respectively, based on the recommendations of Cohen (1988).

It is noteworthy that although our CBGT plus SST condition yielded very large effect sizes, effect sizes for the CBGT-only condition, although clinically significant, were nevertheless somewhat more modest. In fact, the CBGT-only condition in the present study appears to have been slightly less effective than in some prior studies of CBGT, both conducted in our laboratory and elsewhere. In a recent study of an individual CBT intervention modeled closely on CBGT, Herbert et al. (2004) found pre- to posttreatment effect sizes on the SPAI-SP ranging from .74 to 1.42. Hope et al. (1995) found an average effect size of 1.13 on the SPAI-SP for CBGT with various subgroups of patients with SAD. Heimberg et al. (1998) obtained an effect size of .75 for CBGT on the social phobia scale of the FQ. On the other hand, the effect sizes of our CBGT-only condition were actually quite consistent with other trials. For example, Woody and Adessky (2002) found an effect size of .64 on the SPAI-SP, and Cox et al. (1998) likewise obtained an effect size of only .56 on the SPAI-SP. To the extent that there was a slight decrease in the effectiveness of the CBGT-only condition in the present study, this may relate to the study design. In order to conduct a rigorous dismantling study, we had to ensure that our therapists explicitly excluded any focus on social skills when delivering the CBGT-only treatment. Although our treatment integrity measures revealed that we were successful in this regard, this actually represents a slight departure from the way CBGT is normally delivered, even when SST per se is not formally included as part of the treatment protocol. That is, although the focus of the standard implementation of CBGT is primarily on the patients' subjective experience of anxiety, behavioral skills are nevertheless sometimes addressed, albeit in an informal and rather cursory way (see Heimberg & Becker, 2002, pp. 211–212, for a discussion of this issue). The explicit exclusion of any mention of behavioral skills in the CBGT-only condition in the present study may have served to weaken the treatment somewhat relative to the way it is normally delivered. This explanation is reinforced by the very large effect sizes that resulted from adding SST to CBGT. Moreover, the effect sizes of the CBGT plus SST treatment in the present study are much larger than those reported in any CBGT study to date, and suggest

the importance of formally integrating SST into the standard CBGT protocol.

Although demonstrating the importance of skills training for at least some persons with SAD, these results do not necessarily imply that SAD is characterized by skills deficits. That is, one should be careful not to assume etiological significance on the basis of treatment effects. Even among those whose social behavior is problematic, their difficulties may reflect skills deficits, the pernicious effects of high anxiety, or both. Our experience suggests considerable heterogeneity in this regard across patients. For example, some participants were able to describe verbally highly appropriate social interactions, but reported that it was difficult to act on this knowledge due to excessive anxiety. Others reported being at a loss as to where to begin in initiating a conversation, and had little awareness of obvious problematic nonverbal or paralinguistic behaviors (e.g., poor gaze, low voice volume). An important feature of our protocol was the high degree of flexibility of the SST component, which permitted us to tailor both the intensity and the content of the skills training to each individual. The skills training component likely improved the behavioral skills of those patients with actual skills deficits, thereby leading directly to improved performance and reduced anxiety and avoidance. For those patients who already had relatively strong skills, the SST may have facilitated an increase in their self-efficacy with respect to social situations, thereby improving their ability to cope with anxiety and consequently decreased social avoidance (Gaudio & Herbert, 2003).

Examination of Figure 1 reveals an interesting trend for patients in both conditions to continue to improve over the 3-month follow up period. This observation should be viewed as only suggestive, however, since these posttreatment to follow-up gains did not reach significance. Nevertheless, this pattern is consistent with other recent findings. Herbert et al. (2002) found continued improvement for several weeks following a brief, 6-week version of CBGT, and Herbert et al. (2004) found a nonsignificant trend for continued improvement following treatment for an individual variant of CBT modeled on the standard CBGT protocol. These findings support the durability of treatment gains and suggest that some participants continue to improve following treatment. Further research is needed to explore possible predictors of continued posttreatment improvement, as well as to identify the mechanisms responsible for such effects.

The behavioral assessment data revealed an interesting pattern of results: Blind ratings of social performance by independent assessors revealed sig-

nificant differences between the groups, whereas self-ratings did not. Consistent with cognitive theories of SAD (Clark & Wells, 1995; Rapee & Heimberg, 1997), these results reveal an apparent discrepancy between the participants' self-perception and how they are actually perceived by others. In fact, the patients may not be fully aware of their degree of improvement. Future research is needed to examine if patients' self-perceptions converge over time with the perceptions of others. In addition, technologies such as videotaped feedback of role-plays (Clark et al., 2003) may be useful in fostering changes in self-perceptions of social behavior.

A possible limitation of this study is the absence of a wait-list only condition to control for time-related effects, measurement effects, and statistical regression to the mean. Although always desirable on methodological grounds, there were several reasons a wait-list condition—or an additional comparative treatment condition such as a credible “placebo” psychotherapy for that matter—was deemed unnecessary. The primary research question involved the additive effects of SST to a well-established intervention, rather than the relative effects of either intervention compared to no treatment or to other treatments. The efficacy of CBGT has already been well established. SAD is generally accepted to follow a chronic and unremitting course without treatment. Since the present sample was composed of only patients with the generalized subtype of SAD and who also had significant rates of comorbid psychopathology, it is unlikely that placebo response contributed significantly to the observed effects. In fact, the documented efficacy of CBGT relative to both pill placebo and to credible psychotherapy “placebo” conditions actually raises questions about the ethics of continued use of wait-list conditions with this population. Nevertheless, caution should be exercised in interpreting the present results beyond the conditions specifically evaluated. Other study limitations include the absence of measures of adherence to homework assignments, the absence of completely independent reliability ratings of diagnostic status, and the fact that the therapists were not completely blind to the study hypotheses.

An important strength of this study is that the minimal participant exclusion criteria yielded a highly representative sample. Patients all met criteria for the more common and more severe generalized subtype of SAD, most met criteria for avoidant personality disorder, and the majority also had additional comorbid Axis I conditions. This supports the external validity of our findings. Most prior research has excluded patients with significant comorbid psychopathology such as major depression

(e.g., Clark et al., 2003; Davidson et al., 2003; Heimberg et al., 1998). The high response rate among patients who received the integrated CBGT and SST program is especially promising.

Future research is needed to clarify the best algorithm for integrating SST within CBGT across patients. Consistent with the recommendations of Strahan and Conger (1999), treatment here was guided by a careful assessment of each individual's specific difficulties, based on a review of videotaped role-play situations that participants completed prior to treatment. Nevertheless, the link between these assessment results and the specific degree of emphasis of the various components of our protocol (i.e., SST, cognitive restructuring, and simulated exposure exercises) was not formalized, but left to the clinical judgment of the therapists. Further research is needed to clarify the optimal strategy for matching assessment results with intervention strategies in SAD. It is possible, for example, that treatment effects might be maximized by matching treatment components to patients' problem areas (e.g., providing SST only when problems with social skills are observed). Although intuitively appealing, such matching of client attributes by intervention type effects within a given disorder have been notoriously difficult to demonstrate in the psychotherapy literature. With respect to SAD, for example, Öst and colleagues (Jerremalm, Jansson, & Öst, 1986; Öst, Jerremalm, & Johansson, 1981) failed to find support for differential treatment effects for physiological, behavioral, and cognitive reactors. The SST procedures employed here may prove beneficial to many patients with generalized SAD as part of a comprehensive cognitive behavioral treatment program regardless of their baseline levels of impairment in social behavior. Given the heterogeneity of problems with social skills among patients with SAD, further research is needed to clarify this issue.

In addition, further research is needed to clarify how the present program compares to other treatments for SAD that highlight SST as a major component. In particular, Turner and colleagues have developed an intervention called Social Effectiveness Therapy (SET) that combines education, SST, exposure, and homework assignments (Turner, Beidel, Cooley, et al., 1994; Turner et al., 1995). Turner et al. (1994) found an effect size of 1.02 for a small sample of 13 patients who completed a course of SET, which compares favorably with studies of CBGT. No studies to date, however, have directly compared SET with standard CBGT, much less with a CBGT protocol that incorporates SST.

Finally, although our results demonstrated impressive gains for most patients, consistent with

prior research, it remains the case that many continued to have residual symptoms, and a few even received minimal benefit from treatment. The development of interventions specifically targeting these treatment-resistant patients is especially needed.

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