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Cognitive Therapy Versus Exposure and Applied Relaxation in Social Phobia: A Randomized Controlled Trial

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A new cognitive therapy (CT) program was compared with an established behavioral treatment. Sixty-two patients meeting *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994) criteria for social phobia were randomly assigned to CT, exposure plus applied relaxation (EXP + AR), or wait-list (WAIT). CT and EXP + AR were superior to WAIT on all measures. On measures of social phobia, CT led to greater improvement than did EXP + AR. Percentages of patients who no longer met diagnostic criteria for social phobia at posttreatment–wait were as follows: 84% in CT, 42% in EXP + AR, and 0% in WAIT. At the 1-year follow-up, differences in outcome persisted. In addition, patients in EXP + AR were more likely to have sought additional treatment. Therapist effects were small and nonsignificant. CT appears to be superior to EXP + AR in the treatment of social phobia.

Keywords: social phobia, cognitive therapy, exposure therapy, avoidant personality disorder, randomized controlled trial

Social phobia is a common and underdiagnosed disorder (Fresco, Erwin, Heimberg, & Turk, 2000) that is associated with considerable social and occupational handicap (Stein & Kean, 2000). In the absence of treatment, the disorder generally runs a chronic course (Dewit, Ogborne, Offord, & MacDonald, 1999). The most common treatments are monoamine oxidase inhibitors, selective serotonin reuptake inhibitors (SSRIs), and behavioral or cognitive–behavioral therapies (CBTs). Each of these treatments has specific short-term effects (for meta-analytic reviews, see Chambless & Hope, 1996; Fedoroff & Taylor, 2001; Feske & Chambless, 1995; Gould, Buckminster, Pollack, Otto, & Yap, 1997; Hood & Nutt, 2001; Taylor, 1996). In the longer term, some studies have found that relapse rates are higher for the pharmacological treatments than for psychological treatments (Haug et al., 2003; Liebowitz et al., 1999).

One limitation of existing treatments is that a substantial proportion of patients continue to experience significant social difficulties at the end of a well-conducted course of therapy (Davidson et al., 2004). In an attempt to increase the overall response rate for cognitive–behavioral treatment, Clark and Wells (1995) proposed a cognitive model of the maintenance of social phobia and, with colleagues, used the model to develop a new cognitive therapy (CT) program. The four maintenance processes that are highlighted in the model are (a) increased self-focused attention and a linked decrease in observation of other people and their responses, (b) use of misleading internal information (feelings and images) to make excessively negative inferences about how one appears to others, (c) extensive use of overt and covert safety behaviors, and (d) problematic pre- and postevent processing. To date, three randomized controlled trials have assessed the effectiveness of the CT program.

The first trial (Clark et al., 2003) was conducted in England by the originators of the treatment and focused on generalized social phobia. CT was compared with fluoxetine plus self-exposure and placebo plus self-exposure. All three treatments were associated with significant improvements, but CT was superior to fluoxetine

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plus self-exposure and placebo plus self-exposure. The overall pretreatment-to-posttreatment effect size for CT was large.

The next two trials were conducted by groups in Germany (Stangier, Heidenreich, Peitz, Lauterbach, & Clark, 2003) and Sweden (Mortberg, Clark, Sundin, & Wistedt, in press). The CT program involves individual treatment. Many other CBT programs use a group format, and it has often been suggested that group treatment may be particularly helpful for social phobia. To explore this issue, both trials compared individual CT with a locally developed group CT or CBT program. Stangier et al. (2003) found that individual CT and group CT were superior to a no-treatment (wait-list) control condition. In addition, on some social phobia measures, individual CT was superior to group CT. Mortberg et al. (in press) found that individual CT was superior to an intensive (3-week) group CBT program and to psychiatric treatment as usual (mainly SSRIs). Taken together, these trials confirm the effectiveness of the CT program and suggest that for this particular treatment, a group format may not be advantageous.

In the present article, we report the results of a further randomized controlled trial that compared CT with one of the best established psychological treatments, namely, exposure therapy (EXP). Existing comparisons between exposure and other established CBT programs have failed to show convincing differences. Meta-analytic and other reviews (Chambless & Hope, 1996; Fedoroff & Taylor, 2001; Feske & Chambless, 1995; Gould et al., 1997; Rodebaugh, Holaway, & Heimberg, 2004; Taylor, 1996) have concluded that exposure and CBT are associated with similar (medium to large) effect sizes. Of the eight studies that have directly compared exposure and CBT, six (Emmelkamp, Mersch, Vissia, & van der Helm, 1985: Hofmann, 2004; Mattick & Peters, 1988; Mattick, Peters, & Clarke, 1989; Scholing & Emmelkamp, 1993a, 1993b) found no difference at posttreatment, one (Butler, Cullington, Munby, Amies, & Gelder, 1984) reported superiority for CBT on a minority of social phobia measures, and one (Hope, Heimberg, & Bruch, 1995) found inconsistent differences (one measure favoring CBT, some other measures favoring EXP). The pretreatment-to-posttreatment effect sizes (Cohen's *d*) that have recently been reported for CT (e.g., 2.14 in Clark et al., 2003) are larger than those associated with EXP (range = 0.35–1.43; see Feske & Chambless, 1995, Table 4; Hofmann, 2004) in these studies. For this reason, it was predicted that the CT program would be superior to EXP.

In previous trials of EXP alone, dropout rates have varied but have reached 20%–30% in some studies (Hofmann, 2004; Scholing & Emmelkamp, 1993b), which is substantially greater than the very low rate (0%) for CT in Clark et al.'s (2003) trial. Differential dropout seriously complicates the interpretation of a trial. To avoid this problem, we attempted to minimize EXP dropouts by combining the treatment with Öst's (1987) well-known applied relaxation (AR) training program. In a previous trial with panic disorder patients, Clark et al. (1994) had found the combination to be appealing to patients and to result in a low dropout rate.

Method

Design

Patients were randomly assigned to CT, exposure plus applied relaxation (EXP + AR), or wait-list control (WAIT). Treatment consisted of up to 14 weekly sessions. Up to 3 booster sessions were given in the first 3 months of follow-up, after which no further treatment was offered. The main assessments were at pretreatment–wait, posttreatment–wait, 3-month follow-up, and 1-year follow-up.

Participants

Letters to clinicians and advertisements brought the trial to the attention of potential participants in Oxford and London (all of whom had to be referred by a clinician). Referrers and patients were told that controlled trials had separately shown that CT and EXP + AR were effective but that the two treatments had not been directly compared and so it was not known which was most effective. The relevant local ethics committees approved the study. Diagnostic interviews used a combination of the Anxiety Disorders Interview Schedule (ADIS; Brown, Di Nardo, & Barlow, 1994) for the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV*) and the Structured Clinical Interview for *DSM–IV* Axis I (SCID–I; First, Spitzer, Gibbon, & Williams, 1995) and Axis II disorders (SCID–II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997). All patients were assessed with the social phobia module of the ADIS, the overview and screener modules of the SCID–I, and the screener questionnaire for SCID–II. If the SCID–I screener module indicated that another Axis I disorder might be present, the SCID–I module for that disorder was also administered. The same applied to the screener questionnaire for the SCID–II. However, regardless of screening responses, all patients were also assessed with the avoidant personality disorder section of the SCID–II. Diagnostic interviews were conducted by psychologists who had received extensive training in the ADIS and SCID. Interviewer reliability was good ($\kappa = .93$) for the diagnosis of social phobia and moderate ($\kappa = .74$) for the diagnosis of avoidant personality disorder. Patients were given a written description of the trial and offered inclusion if they met the following criteria: (a) the patient met *DSM–IV* (American Psychiatric Association, 1994) criteria for social phobia; (b) the patient had experienced social phobia for a duration of at least 6 months; (c) social phobia was considered to be the patient's main current problem; (d) the patient was 18–60 years old; (e) he or she did not meet *DSM–IV* criteria for alcohol or substance dependency; (f) he or she had no current or past psychosis; (g) the social phobia had not previously been treated with EXP or CBT; (h) the patient was on no psychotropic medication or had been on a stable dose for at least 2 months without symptomatic improvement and was willing to keep the dosage constant during the trial; and (i) he or she agreed not to start any additional treatment during the trial. With the exception of borderline personality disorder, Axis II personality disorders were not a reason for exclusion.

Of 116 social phobia patients referred between March 2001 and December 2002 for possible inclusion in the trial, 47 did not meet entry criteria. Figure 1 summarizes the reasons. After signing a consent form, the remaining 62 patients were allocated to treatment on a stratified random basis, by using the minimization method (Pocock, 1984, pp. 84–86) by an independent allocation office. Stratification variables were initial severity of social phobia (Liebowitz Social Anxiety Scale score > 75 vs. ≤ 75; Liebowitz, 1987), age (30 years vs. $\leq$ 30 years), and site (Oxford vs. London).

Treatments

CT was essentially the same as in Clark et al. (2003). A variety of procedures, which are described in a manual (Clark, 1997) and elsewhere (Clark, 2001; Wells, 1997, pp. 167–199), were used to reverse the maintaining factors identified in Clark and Wells's (1995) model of social phobia. This model provides a similar account of maintenance to that proposed by Rapee and Heimberg (1997). Although overlapping in some respects with other empirically validated CBT programs, CT has several distinctive features. These include the following: (a) the development of a

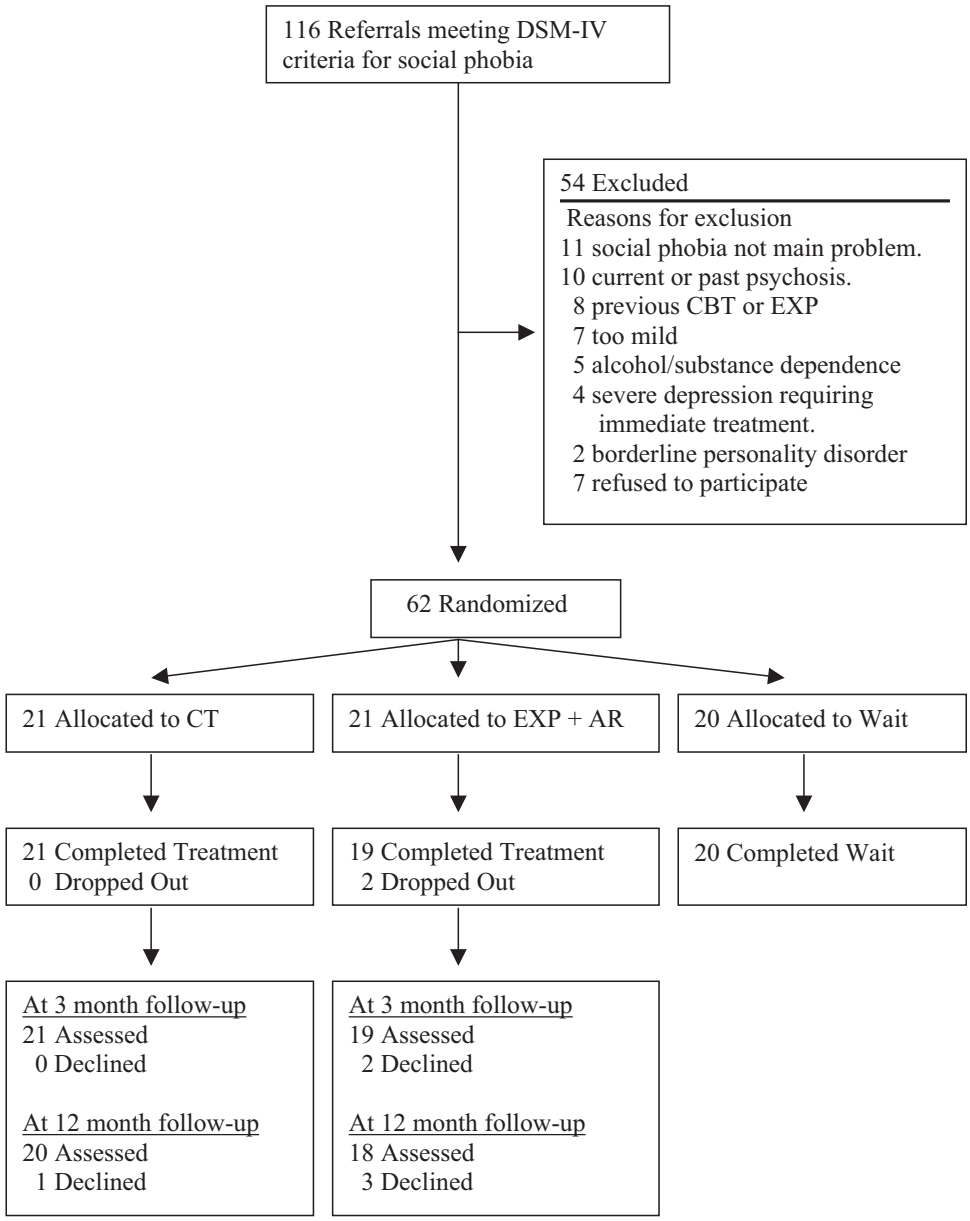

Figure 1. Flowchart of patients' progress through phases of the trial. *DSM–IV = Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994); CBT = cognitive–behavioral therapy; EXP = exposure therapy; CT = cognitive therapy; EXP + AR = exposure plus applied relaxation; Wait = wait-list control condition.

version of Clark & Wells's (1995) model by using the patient's own thoughts, images, attentional strategies, safety behaviors, and symptoms; (b) experiential exercises in which self-focused attention and safety behaviors are systematically manipulated in order to demonstrate their adverse effects; (c) systematic training in externally focused attention with practice in nonsocial and social situations; (d) techniques for restructuring distorted self-imagery, including a specialized way of using video feedback (see Harvey, Clark, Ehlers, & Rapee, 2000); (e) surveys to collect data on other people's beliefs about such issues as blushing and trembling; and (f) the structuring of planned confrontation with feared social situations as a behavioral experiment in which patients test prespecified negative predictions while dropping their habitual safety behaviors and focusing externally. A habituation rationale was not used, and repeated exposure to the same situation was not encouraged. Unlike some CBT programs, patients were not encouraged to develop positive self-talk before or during social situations, and there was no formal social skills training.

EXP + AR was based on the EXP described by Butler (1985) and the AR training described by Öst (1987). Throughout treatment, therapy sessions included exposure exercises and relaxation training, each of which was also included in weekly homework assignments. Exposure was presented in the context of a habituation rationale. Hierarchies were constructed, and patients were encouraged to progress up their hierarchy in a relatively rapid manner that also helped build their confidence. As advocated by Butler (1985), considerable attention was paid to in-situation

(subtle) avoidance, with patients being encouraged to reverse in-situation avoidance and to enter situations they would normally avoid. In-session exposure focused on in vivo exercises, rather than role-plays with the therapist. Training in AR was presented as an anxiety management procedure. It was explained that strong physical reactions in feared situations are a major contributor to patients' social fears and that the training had been specifically developed to deal with these reactions. In the original AR protocol (Öst, 1987), exposure is not introduced until after the relaxation techniques have been fully mastered. We deviated from this practice by using exposure exercises throughout treatment. However, as advocated by Öst (1987), patients were instructed to refrain from using their newly acquired relaxation techniques in phobic situations until they had completed all the steps in the relaxation training program (around Session 10).

In both CT and EXP + AR, sessions typically lasted 90 min. The relaxation training component of EXP + AR took approximately 20 min. Both rationales were based on a treatment-relevant model of the maintenance of the disorder that was personalized to include the patient's own symptoms and behavior. Intentional confrontation with feared situations (albeit with different rationales and set up in different ways) formed a key part of both CT and EXP + AR. The trial design required that such exercises would be at least as common in EXP + AR as in CT. To check whether this was the case, therapists were required to record such exercises in their therapy session notes, and patients kept a daily diary of exposure homework. Patients in EXP + AR completed significantly more exposure assignments than did patients in CT during therapy sessions (EXP + AR median = 1.11 per session, CT median = 0.64, $U = 72.50$, $p < .001$) and as homework (EXP + AR median = 7.75 per week, CT median = 5.66, $U = 128.50$, $p < .05$).

Sites, Therapists, Supervision, and Treatment Integrity

The two treatment sites were well known for their CT (Oxford) and EXP (London) expertise, respectively. Six clinical psychologists (Ann Hackmann, Freda McManus, Melanie Fennell, Nick Grey, Louise Waddington, and Jennifer Wild), all of whom had prior experience of CBT and EXP treatments for anxiety, delivered the treatments. Each therapist treated at least two practice social phobia cases in each modality before the start of the trial. All therapists had regular supervision by David M. Clark, to check protocol adherence and to assist with planning future sessions. At the end of the trial, a randomly selected session videotape from each patient was rated for the presence or absence of procedures that should be unique to each treatment. Interrater reliability was good ($\kappa = .95$). There were no protocol violations. Therapist competence was not rated.

At the start of the trial, 45 patients (72%) were medication free. The remaining 17 patients had been on a stable dose for at least 2 months without symptomatic improvement and were asked not to change their medication. The medications were SSRIs (10 patients), beta-blockers (5 patients), and benzodiazepine (2 patients). At the posttreatment–wait assessment, 11 of these patients were on the same medication, and 6 (3 in CT, 2 in EXP + AR, 1 in WAIT) had discontinued all medication. Reanalysis of the primary outcome measure (Social Phobia Composite) excluding patients who were taking medication at the start of the trial produced an identical pattern of results to those reported below for the total sample. In particular, all group differences that were significant in the total sample were also significant in the medication-free sample at all time points.

Measures

Social phobia. The main outcome measure was the Social Phobia Composite. This was created by combining scores from seven independent assessor and patient scales by using Rosenthal and Rosnow's (1991) procedure, which has been adopted in several previous trials (e.g., Clark et al., 1994, 2003) of psychological treatments. Patients' scores on each scale were standardized ($M = 0$, $SD = 1$) across pretreatment and posttreatment assessments by converting to Z scores. The composite at each assessment occasion was the mean of the Z scores on that occasion. The individual scales that made up the composite are as follows. Independent assessors, who were blind to treatment allocation on each occasion, rated patients' fear and avoidance across a range of social situations by using the ADIS for the *DSM–IV* (Brown et al., 1994). The mean rating across all fear and avoidance items was analyzed ($r = .97$ for interrater agreement). Patients completed five standardized self-report social phobia scales, which are listed in Table 1. An additional self-report measure, the Social Phobia Weekly Summary Scale (Clark et al., 2003), which was developed by our group, was also included. The six-item Social Phobia Weekly Summary Scale has good internal consistency (Cronbach's alpha = .81) and consists of ratings on a scale from 0 to 8 of social anxiety, social avoidance, self-focused versus external attention, anticipatory processing, and postevent rumination.

At pretreatment–wait and posttreatment–wait only, patients also completed a behavior test, developed by Richard Heimberg's group at Temple University, which comprises two standardized social tasks (a conversation and then a speech). After each interaction, patients complete a 14-item checklist covering their perception of how well they performed (e.g., whether they were embarrassed or boring or whether their voice was quivering or their hands were shaking), and a mean checklist score was computed. The checklist has good internal consistency (Cronbach's alpha = .85).

Anxious and depressed mood. The Beck Anxiety Inventory (BAI; Beck & Steer, 1993) and the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) were used to assess anxious and depressed mood, respectively.

Nonspecific therapy factors. At the end of the second treatment session, the therapist and patient independently completed a measure of therapeutic alliance (Agnew-Davies, Stiles, Hardy, Barkham, & Shapiro, 1998). Patients also completed Borkovec and Nau's (1972) treatment credibility and expectancy of improvement scales.

Statistical Analysis

Sample sizes, based on 82% power to detect predicted differences between CT and EXP + AR on the Social Phobia Composite, were set before the start of the trial. Analyses were intention to treat with last available data point carried forward, if necessary. To identify any differences between the groups before treatment–wait, we compared initial scores for the three groups with the liberal procedure of separate one-way analyses of variance for each measure. To identify any differences between groups at posttreatment–wait or follow-up, we used one-way analyses of covariance (ANCOVAs) with pretreatment scores as covariates, followed by post hoc Duncan multiple-range tests when more than two means were being compared. To identify significant within-group changes, we used t tests. A two-stage analytic procedure was set in advance. Analyses of possible differences in outcome on individual social phobia measures could be conducted only if a significant overall effect had been observed on the Social Phobia Composite. Preliminary analyses of covariance established that there were no significant effects of site (London vs. Oxford) or therapist, and as a consequence, these factors were not included in the main analyses. The nonsignificant main effects and interactions were as follows: site, $F(1, 55) = 0.00$, $p = .98$, $\eta_p^2 < .001$; Site × Treatment, $F(2, 55) = 0.46$, $p = .64$, $\eta_p^2 = .02$; therapist, $F(4, 30) = 0.26$, $p = .86$, $\eta_p^2 = .01$; Therapist × Treatment Condition, $F(4, 30) = 0.52$, $p = .97$, $\eta_p^2 = .003$. The analyses presented in this article are based on initial allocations without statistical control for any third variables. Although not reported here, analyses that also included the patients who were randomized to treatment after WAIT produced an identical pattern of significant differences between CT ($n = 29$) and EXP + AR ($n = 30$). Similarly, covarying out initial BDI, therapeutic alliance, treatment credibility, or expectation of improvement had no effect on the results.

Table 1
Outcome Measures at Each Assessment

Assessment	CT (n = 21) *M*	CT (n = 21) *SD*	Exp + AR (n = 21) *M*	Exp + AR (n = 21) *SD*	Wait-list (n = 20) *M*	Wait-list (n = 20) *SD*	Group effect[a]
Social Phobia Composite							
Pretreatment	0.44	0.88	0.66	0.80	0.58	0.66	$F(2, 59) = 0.43$
Posttreatment	-1.56_a	0.79	-0.56_b	1.13	0.48_c	0.65	$F(2, 58) = 33.80$***
3-month follow-up	-1.68_a	0.88	-0.56_b	1.08			$F(1, 39) = 14.50$***
1-year follow-up	-1.56_a	0.96	-0.69_b	1.05			$F(1, 39) = 7.05$*
ADIS Fear and Avoidance (Brown et al., 1994)							
Pretreatment	3.59	1.53	3.91	1.19	4.09	1.24	$F(2, 59) = 0.76$
Posttreatment	1.27_a	0.98	2.15_b	1.40	3.68_c	0.85	$F(2, 57) = 28.75$***
3-month follow-up	1.12_a	0.95	2.32_b	1.66			$F(1, 38) = 7.66$**
1-year follow-up	1.17_a	0.99	1.98_b	1.33			$F(1, 38) = 4.09$*
Social Phobia Scale (Mattick & Clarke, 1998)							
Pretreatment	29.33	13.49	34.26	15.89	32.30	12.55	$F(2, 59) = 0.65$
Posttreatment	8.95_a	6.03	20.24_b	16.10	32.40_c	15.12	$F(2, 58) = 21.63$***
3-month follow-up	9.05_a	7.15	20.14_b	15.31			$F(1, 39) = 8.31$**
1-year follow-up	9.66_a	8.84	18.71_b	14.69			$F(1, 39) = 4.49$*
Social Interaction Anxiety Scale (Mattick & Clarke, 1998)							
Pretreatment	43.57	17.80	50.61	17.18	47.65	11.03	$F(2, 59) = 1.07$
Posttreatment	18.19_a	10.01	32.57_b	16.08	46.25_c	13.23	$F(2, 58) = 27.52$***
3-month follow-up	17.76_a	13.38	32.43_b	14.70			$F(1, 39) = 10.53$**
1-year follow-up	19.02_a	14.00	29.83_b	14.85			$F(1, 39) = 3.93$†
Liebowitz Social Anxiety Scale (Liebowitz, 1987)							
Pretreatment	74.83	24.10	78.70	23.70	77.19	22.48	$F(2, 59) = 0.15$
Posttreatment	28.00_a	17.71	52.32_b	33.89	77.21_c	21.36	$F(2, 58) = 27.79$***
3-month follow-up	27.20_a	20.06	55.25_b	31.37			$F(1, 39) = 14.62$***
1-year follow-up	29.56_a	24.42	48.81_b	29.17			$F(1, 39) = 5.83$*
Social Phobia Weekly Summary Scale (Clark et al., 2003)							
Pretreatment	5.10	0.94	4.69	1.15	4.58	1.16	$F(2, 59) = 1.31$
Posttreatment	1.80_a	1.41	3.08_b	1.16	4.45_c	0.94	$F(2, 58) = 30.52$***
3-month follow-up	1.66_a	1.53	3.17_b	1.33			$F(1, 39) = 13.80$***
1-year follow-up	2.08_a	1.64	3.27_b	1.61			$F(1, 39) = 7.39$**
Social Phobia Anxiety Inventory Social Phobia subscale (Turner et al., 1989)							
Pretreatment	118.98	33.76	131.00	32.05	127.80	22.33	$F(2, 59) = 0.91$
Posttreatment	56.53_a	34.92	96.11_b	45.14	122.81_c	27.26	$F(2, 58) = 18.03$***
3-month follow-up	50.18_a	37.11	89.19_b	43.01			$F(1, 39) = 8.08$**
1-year follow-up	52.96_a	41.68	88.80_b	39.16			$F(1, 39) = 6.46$*
Fear of Negative Evaluation (Watson & Friend, 1969)							
Pretreatment	23.14	7.02	25.14	6.10	24.40	5.57	$F(2, 59) = 0.55$
Posttreatment	12.90_a	8.88	18.95_b	8.91	24.40_c	5.12	$F(2, 58) = 12.26$***
1-year follow-up	15.10	9.52	19.50	8.60			$F(1, 36) = 1.60$
Beck Anxiety Inventory (Beck & Steer, 1993)							
Pretreatment	19.00	8.60	17.95	8.56	16.80	8.69	$F(2, 59) = 0.33$
Posttreatment	3.19_a	3.93	7.48_b	5.50	13.50_c	7.05	$F(2, 58) = 18.64$***
3-month follow-up	4.29_a	4.54	8.11_b	7.92			$F(1, 39) = 4.39$*
1-year follow-up	4.91	6.03	9.24	10.85			$F(1, 39) = 3.32$†

Table 1 (*continued*)

Assessment	CT (n = 21) *M*	CT (n = 21) *SD*	Exp + AR (n = 21) *M*	Exp + AR (n = 21) *SD*	Wait-list (n = 20) *M*	Wait-list (n = 20) *SD*	Group effect[a]
Beck Depression Inventory (Beck et al., 1979)							
Pretreatment	12.40	8.65	16.85	10.30	13.20	6.00	$F(2,59)=1.61$
Posttreatment	2.57_{a}	3.93	$7.91_{a,b}$	10.80	10.25_{b}	6.21	$F(2,58)=5.90$**
3-month follow-up	4.24	8.39	10.67	12.65			$F(1,39)=2.14$
1-year follow-up	3.38	4.02	7.43	7.84			$F(1,39)=2.06$

Note. Within an assessment occasion, means with no subscripts and those that share the same subscript do not differ. Means with non-overlapping subscripts differ at $p < .05$ or better. Significant ($p < .01$) analysis of variance (ANOVA) or analysis of covariance (ANCOVA) main effects were investigated with post hoc Duncan multiple range tests when more than two means were involved. All patients provided posttreatment data. Four patients declined one or both follow-up assessments. One of these patients (originally allocated to EXP + AR) was suicidal for a period during the follow-up year. For all 4 patients, the last available assessment is carried forward for the means reported above. Reanalysis of the follow-up data without carrying forward produced essentially identical results. In particular, on the social phobia measures, CT remained superior to EXP + AR at the 3-month and 1-year follow-ups. The Fear of Negative Evaluation Scale was not administered at the 3-month follow-up. CT = cognitive therapy; EXP + AR = exposure plus applied relaxation; ADIS = Anxiety Disorders Interview Schedule.

[a] At pretreatment, the group effect is based on a one-way ANOVA. At all other assessment points, the group effect is based on a one-way ANCOVA, with pretreatment scores as the covariate.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Results

Characteristics of Patients

Patients' mean age was 31.95 years (SD = 8.58), and the mean duration of social phobia was 13.13 years (SD = 11.15). Most patients (88%) had the generalized subtype of social phobia. Fifty-six percent were male. Thirty-six percent were married or cohabiting. Eighty-nine percent were Caucasian. Eighty-one percent were employed, 11% were students, and 8% were unemployed. Thirty-one percent left school by age 16, 10% completed high school, and 59% had some higher education. Fifty-five percent met diagnostic criteria for one or more additional Axis I disorders (21% current, 34% past only). The main comorbid Axis I disorders were major depressive disorder (39%), specific phobia (11%), alcohol or substance abuse (11%), dysthymia (8%), panic disorder (5%), posttraumatic stress disorder (2%), and bulimia (2%). Fifty-six percent of patients met criteria for one or more personality disorders, which were avoidant (50%), depressive (18%), paranoid (7%), obsessive (3%), narcissistic (3%), dependent (2%), and histrionic (2%). There were no significant differences between the groups in any of these characteristics.

Dropouts and Number of Sessions Attended

Dropout rates were low in both treatments and did not differ. Two patients (9%) in EXP + AR were classified as dropouts. One withdrew from the trial at Week 4 and was assessed at that point. The other attended only half of the scheduled sessions. There were no dropouts in CT. Overall, the two treatments did not differ in the number of sessions attended, which were as follows: CT, 12.76 (SD = 1.61) treatment sessions and 2.24 (SD = 1.14) follow-up sessions; EXP + AR, 11.91 (SD = 2.64) treatment sessions and 1.90 (SD = 1.25) follow-up sessions.

Nonspecific Therapy Factors

CT and Exp + AR did not differ in therapeutic alliance, treatment credibility, or expectation of improvement. Means and standard deviations were as follows: therapeutic alliance (therapist rated; CT, 5.03 ± .81; EXP + AR, 4.81 ± .81), $t(36) = 0.83$, $p = .41$, $\eta_p^2 = .02$; therapeutic alliance (patient rated; CT, 6.09 ± 0.56; EXP + AR, 6.0 ± 0.66), $t(40) = 0.57$, $p = .57$, $\eta_p^2 = .01$; treatment credibility (CT, 7.73 ± 1.05; EXP + AR, 7.35 ± 1.44), $t(40) = 1.14$, $p = .26$, $\eta_p^2 = .03$; expectation of improvement (CT, 6.96 ± 1.43; EXP + AR, 6.41 ± 1.87), $t(40) = 1.25$, $p = .22$, $\eta_p^2 = .02$.

Effects of Treatment on Social Phobia

Figure 2 shows the Social Phobia Composite at each time point. Table 1 shows the individual social phobia measures. At pretreat-

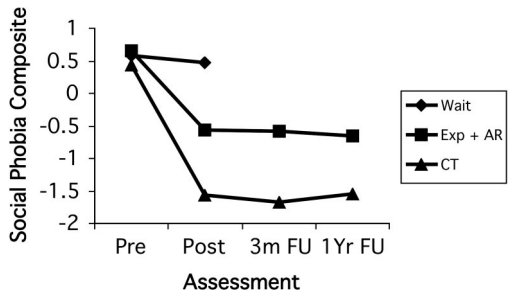

Figure 2. Social Phobia Composite scores at each assessment. WAIT = wait-list control condition; EXP + AR = exposure plus applied relaxation; CT = cognitive therapy; Pre = pretreatment–wait; Post = posttreatment–wait; 3m FU = 3-month follow-up; 1Yr FU = 1-year follow-up.

ment, one-way analyses of variance and paired comparisons indicated that there were no significant differences between any of the groups on any measure.

At posttreatment, an ANCOVA revealed a significant group effect on the social phobia composite. Paired comparisons indicated that CT and EXP + AR were both superior to WAIT. In addition, CT was superior to EXP + AR. Analysis of the seven individual social phobia measures indicated that on all measures, CT and EXP + AR were superior to WAIT and that CT was superior to EXP + AR. Within-group *t* tests were used to assess pretreatment–wait to posttreatment–wait change. There was no significant improvement in the WAIT condition. CT and EXP + AR were each associated with significant pretreatment-to-posttreatment improvement on the Social Phobia Composite and on all the individual social phobia measures.

Table 2 shows the behavior test data. The results are in accord with the other social phobia measures. At pretreatment–wait, there were no significant differences between the groups. At posttreatment–wait, CT and EXP + AR were both superior to WAIT. In addition, CT was superior to EXP + AR.

Effects of Treatment on Anxious and Depressed Mood

The anxious mood measure (BAI) showed a similar pattern to the social phobia measures (see Table 1). At posttreatment–wait, CT and EXP + AR were both superior to WAIT. In addition, CT was superior to EXP + AR. The depressed mood measure (BDI) showed a different pattern. Both treatments were again superior to WAIT, but CT did not differ from EXP + AR. Within-group *t* tests showed that both CT and EXP + AR were associated with significant pretreatment-to-posttreatment improvement on the BAI and BDI. In addition, the WAIT group showed significant pretreatment-to-posttreatment improvement on the BDI but not the BAI.

Maintenance of Treatment Gains

To determine the extent to which treatment gains were maintained, we readministered the Social Phobia and General Mood scales at the 3-month and 1-year follow-ups. To determine whether treatment of social phobia also reduced the incidence of avoidant personality disorder, we also readministered the SCID–II avoidant personality module (First et al., 1997) at the 1-year follow-up.

3-month follow-up. For the social phobia measures, an ANCOVA indicated that CT was superior to EXP + AR on the Social Phobia Composite and on all the individual social phobia measures. For the mood measures, CT was superior to EXP + AR on the BAI but not the BDI.

1-year follow-up. CT was superior to EXP + AR on the Social Phobia Composite and on five (of seven) individual social phobia measures. CT did not differ from EXP + AR on the mood measures. No protocol treatment was offered between the 3-month follow-up and the 1-year follow-up. However, patients were free to seek treatment outside the trial. Nontrial treatment (medication for 7 patients; psychological therapy for 2 patients) was more common in the EXP + AR group (44% of patients) than in the CT group (6% of patients), $\chi^2(1, N = 40) = 7.98$, $p < .01$, raising the possibility that the maintained improvement in EXP + AR may have been partly due to extra treatment. The number of patients meeting diagnostic criteria for avoidant personality disorder was significantly reduced at the 1-year follow-up assessment in both treatment groups (McNemar test, $p < .05$ for each treatment). Of the patients who met avoidant personality disorder criteria at pretreatment, the proportion who no longer met the criteria at the end of boosters was 78% (7 of 9 patients) in CT and 71% (10 of 14 patients) in EXP + AR.

Effect Sizes and Responder Status

Controlled effect sizes comparing the two treatments with the WAIT condition and with each other were computed for the social phobia composite by using the following formula: controlled effect size = (Posttreatment A covariance adjusted mean − Posttreatment B or post-WAIT adjusted mean)/pooled standard deviation. Cohen (1988) proposed a threefold classification of effect sizes: small (0.20–0.49), medium (0.50–0.79), and large (0.80 and above). According to this system, the posttreatment controlled effect sizes compared with WAIT were large for both CT (2.63) and EXP + AR (1.46). The posttreatment controlled effect size for the comparison between CT and EXP + AR was also large (1.17).

Responder status was operationalized in two ways: loss of social phobia diagnosis and clinically significant change on the Liebowitz Social Anxiety Scale. Following Jacobson and Truax (1991), clinically significant change was defined as a statistically reliable improvement that placed a patient within the range (mean ± two standard deviations) of the nonclinical population (calculated us-

Table 2
Behavior Test: Social Anxiety Checklist Scores at Each Assessment

	CT ($n = 20$)		Exp + AR ($n = 19$)		WAIT ($n = 18$)		
Assessment	*M*	*SD*	*M*	*SD*	*M*	*SD*	Group effect
Pretreatment	4.45	1.27	4.80	0.91	4.53	0.62	$F(2, 54) = 0.66$
Posttreatment	2.36_a	1.56	3.34_b	1.20	4.48_c	0.88	$F(2, 53) = 20.46$***

Note. Within an assessment occasion, means with no subscripts and those that share the same subscript do not differ. Means with non-overlapping subscripts differ at $p < .05$ or better. Sample sizes are less than in Table 1 as 5 patients (1 in CT, 2 in EXP + AR, 1 in WAIT) refused the behavior test at pretreatment–wait. CT = cognitive therapy; Exp + AR = exposure plus applied relaxation; WAIT = wait-list.
*** $p < .001$.

ing Fresco et al.'s [2001] nonpatient Liebowitz Social Anxiety Scale data). At posttreatment–wait, the percentage of patients who no longer met diagnostic criteria for social phobia was 86% in CT, 45% in EXP + AR, and 5% in WAIT. The percentage of patients who had achieved clinically significant improvement was 76% in CT, 38% in EXP + AR, and 0% in WAIT. Fisher's exact test indicated that on both measures, CT had a higher response rate than did EXP + AR ($p < .05$), which in turn was superior to WAIT ($p < .05$).

Relative Magnitude of Therapist and Treatment Effects

It has sometimes been suggested that therapist effects are larger than treatment effects in psychotherapy research. To determine their relative contribution in the present study, we performed a Therapist × Type of Treatment (CT vs. EXP + AR) ANCOVA on the posttreatment Social Phobia Composite scores with pretreatment scores as covariates. The four therapists who had each treated at least 3 patients per condition were included. There was a significant effect of type of treatment, $F(1, 28) = 7.35$, $p < .05$, $\eta_p^2 = .208$; no significant effect of therapist, $F(3, 28) = 0.14$, $p = .92$, $\eta_p^2 = .017$; and no significant interaction between therapist and treatment, $F(3, 28) = 0.28$, $p = .84$, $\eta_p^2 = .029$. Partial eta-squared values indicated that type of treatment accounted for 21% of the outcome variance and that therapists accounted for less than 5% of the outcome variance.

Discussion

Effectiveness of CT and EXP + AR Compared With WAIT

The overall pattern of results indicates that both CT and EXP + AR were effective treatments for social phobia. At the posttreatment–wait assessment, patients who received either treatment had improved significantly more than WAIT patients on self-report measures, independent assessor ratings, and behavior test scores. For both treatments, the controlled effect sizes (relative WAIT) were large.

Comparative Effectiveness of CT and EXP + AR on Social Phobia Measures

As predicted, comparisons between the two treatments indicated that CT was superior to EXP + AR on the social phobia measures. Twice as many patients were classified as treatment responders in CT than in EXP + AR. The controlled effect size for the contrast between CT and EXP + AR was large for a comparison between two active treatments. In addition, the consistency of the difference between CT and EXP + AR across different measures of social phobia is in contrast to previous trials that have compared various CBT programs with various versions of EXP (see Introduction).

Establishing CT as a Specific Treatment

What conclusions can be drawn from the comparative effectiveness of CT and EXP + AR in the present trial? The clearest conclusion would seem to be that the present CT program is a specific treatment for social phobia in the sense that its effectiveness cannot be entirely explained by the nonspecific therapy factors that are common to many well-conducted psychotherapies. In other trials of the CT program (e.g., Clark et al., 2003; Mortberg et al., in press; Stangier et al., 2003), CT and the alternative treatments with which it has been compared were not equated in terms of therapist time and some other nonspecific therapy factors. In the present trial, CT and EXP + AR involved the same amount of therapist contact; were delivered by the same therapists; and had a similarly strong emphasis on developing a clear treatment rationale, monitoring symptoms, and setting and reviewing weekly homework assignments. In addition, ratings taken at the end of the second session indicated that the two treatments did not differ in quality of the therapeutic alliance, credibility of treatment, or patients' expectations of improvement.

Possible Reasons for the Greater Impact of CT on Social Phobia

Before discussing possible reasons for the greater effectiveness of CT compared with EXP + AR, it is necessary to establish that EXP + AR was implemented appropriately in the present trial and, in particular, that it was not less effective than in previous trials of EXP. In social phobia, EXP is most often delivered in a group treatment format, and it could be argued that our use of an individual treatment format undermined the effectiveness of EXP. Closer inspection of our data does not support this suggestion. The initial severity of social phobia and proportion of patients with avoidant personality disorder in the present trial is similar to that in many other trials. However, the EXP + AR dropout rate of 10% is low, and the pretreatment-to-posttreatment effect size for EXP + AR (1.25) is close to the top end of the range of effect sizes (0.35–1.43) that have been observed with EXP in other comparative trials of EXP versus CBT (see Feske & Chambless, 1995, Table 4; Hofmann, 2004). It also compares favorably with the mean effect sizes (0.82–1.08) that have been observed for EXP in published meta-analyses (see Rodebaugh, Holaway, & Heimberg, 2004, Table 1). In addition, although group treatment is more common than individual treatment in EXP studies, trials that have directly compared the two formats have failed to demonstrate a difference in outcome (Scholing & Emmelkamp, 1993b; Wlazlo, Schroeder-Hartwig, Hand, Kaiser, & Månchau, 1990). It could perhaps also be suggested that our decision to combine training in AR with EXP may have reduced the effectiveness of exposure. This seems unlikely in light of the following: (a) EXP + AR's large effect size; (b) the fact that, as usual with AR, patients were instructed not to use the relaxation technique in feared social situations until late in therapy (Session 10) when they had fully mastered the technique; (c) the finding that AR with EXP is at least as effective as EXP alone in other phobic disorders (see Öst, Westling, & Hellström, 1993, for a review); (d) the absence of any demonstrations of deleterious effects of relaxation training on exposure in any anxiety disorder; and (e) Butler et al.'s (1984) finding that in social phobia, EXP alone was less effective than EXP plus relaxation and other coping techniques.

As EXP appears to have been implemented in a manner that was not less effective than other EXP programs, the greater efficacy of CT warrants further discussion. CT involved less confrontation with feared social situations than did EXP + AR, which would seem to support the common suggestion that fewer exposures may be required to obtain the same or better effects if embedded within

a CT program. Broadly speaking, the differences in procedures between CT and EXP + AR can be divided into two categories: first, differences between the treatments in the way exercises involving confrontation with feared social situations are set up and processed and, second, procedures that were present in one treatment but absent in the other. The trial was not designed to assess the effect of particular procedural differences. However, therapy experiments that attempt to assess the short-term impact of a discrete therapy maneuver have indicated that some of the ways in which CT differs from EXP + AR can have short-term effects on social anxiety. For example, confrontation with feared social situations produces greater fear reduction when an external focus of attention is adopted (Wells & Papageorgiou, 1998) and when exposure is framed as a behavioral experiment with linked dropping of safety behaviors (Morgan & Raffles, 1999; Wells et al., 1995), both of which are components of CT. Similarly, three procedures that are present in CT but not in EXP + AR have been shown to be effective. The procedures are experiential demonstrations of the adverse effects of self-focused attention and safety behaviors (McManus et al., 2005), video feedback (Harvey et al., 2000), and imagery modification (Hirsch, Clark, Mathews, & Williams, 2003; Hirsch, Meynen, & Clark, 2004). Other differences have yet to be evaluated.

Contrast Between Social Phobia and Depressed Mood Measures

In contrast to the results obtained with standardized measures of social phobia, at posttreatment and follow-up there were no significant differences between CT and EXP + AR on the BDI. The substantial improvements in depressed mood that were observed with both treatments are consistent with the view that much of the depressed mood observed in our patients was secondary to their social phobia. The observed lack of difference between the two treatments on the BDI would appear to indicate that CT's enhanced effectiveness is largely restricted to social phobia and anxiety measures. An alternative possibility is a floor effect. Consistent with the latter, in both treatments the posttreatment means for the BDI were in the nonclinical range (Beck et al., 1979).

Relative Magnitude of Treatment Effects and Therapist Effects

It has sometimes been suggested that therapist effects are larger than treatment effects in psychotherapy research. The use of multiple therapists who delivered both treatments allowed us to address this issue. Contrary to the suggestion, differences in outcome between our therapists were nonsignificant and accounted for less than 5% of the variance in outcome, whereas the difference between CT and EXP + AR accounted for 21% of outcome variance. Factors that may have contributed to this pattern of results include the highly structured nature of the treatment protocols, regular within-trial supervision focusing on protocol adherence, and the use of fully qualified therapists who had received pretrial supervised practice in the treatments.

Limitations

Some limitations of our study need to be acknowledged. First, EXP is not a unitary entity. There are many ways of doing exposure. Although the way exposure was implemented in this trial is representative of the field and was clearly effective, it would be unsafe to assume that the superiority of CT to EXP + AR that was observed in this trial would necessarily generalize to all ways of implementing exposure. Several of the ways in which CT patients were encouraged to process feared situations (e.g., an external focus of attention and the use of a behavioral experiment rationale rather than a habituation rationale) could easily be incorporated into an exposure-only program and may well enhance its effectiveness. Second, the study was conducted by the team that developed the CT program. It will be important to see how well CT transports to other clinics and countries. It is encouraging to note that two studies (Mortberg et al., in press; Stangier et al., 2003) from other countries have reported positive results. In particular, in both studies the individual CT program described here was superior to a locally developed group CBT or group CT program, despite the local teams' expectation that their group treatments would be at least as effective as individual CT. Further evaluations would be welcome. Third, our follow-up period was uncontrolled. Additional nonprotocol treatment during the follow-up was rare (6%) in CT, but a substantial proportion (44%) of EXP + AR patients had some form of nonprotocol treatment during follow-up. This suggests that for EXP + AR, the sustained improvement that was seen at the 1-year follow-up may be partly a function of additional and different treatment. Nonprotocol treatment during follow-up is rarely monitored in research reports. Our findings suggest that it should be. Finally, CT makes extensive use of video and involves relatively long sessions (90 min), characteristics that may make it difficult to disseminate to some clinical settings.

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