

Social Skills Training Versus Cognitive Therapy for Social Anxiety Disorder Characterized by Fear of Blushing, Trembling, or Sweating

Susan M. Bögels
University of Amsterdam

Marisol Voncken
University of Maastricht

Current interpersonal models suggest that social anxiety disorder (SAD) is characterized by interpersonal difficulties. Individuals with SAD and fear of showing bodily symptoms also suffer from interpersonal problems, such as not being open and avoidance of expressing insecurity. Training in social skills could, therefore, be an effective approach. We examined the overall and differential effects of social skills training (SST) versus cognitive therapy (CT) for social anxiety with fear of blushing, trembling, and sweating as the primary complaint. Patients ($n = 55$) with SAD (predominantly generalized subtype) and fear of blushing, trembling, or sweating as the main complaint were randomly assigned 12 weekly group sessions of SST or CT. Effects of treatments on fear of blushing, trembling, and sweating; SAD; social skills; social cognitions; and general psychopathology were assessed by means of self-report. Assessments took place at pretreatment, midtreatment, posttreatment, 1-month, and 1-year follow-up. Both treatments proved to be effective in the short and long-term, with large effect sizes. No differential effects were found. SST is a promising approach for individuals with SAD who fear displaying their bodily symptoms.

Social phobia (social anxiety disorder, SAD) has at its core the fear of being negatively evaluated by other people. Whereas many patients with SAD fear negative evaluation as a result of their behavior or physical appearance, those with fear of blushing, trembling, or sweating as the predominant complaint are typically afraid of being rejected when

The authors thank Arnoud Arntz, Maria Lemmens, Jan Oosterwijk, and Ken Smith for diagnosing patients and conducting treatments; Martin Hildebrand and Hannie Keijzers for help in the data acquisition; and Eric Schouten for statistical assistance.

Send all correspondence to Susan Bögels, University of Amsterdam, P.O. Box 94208, 1090 GE Amsterdam, The Netherlands. Email: S.M.Bogels@uva.nl

others notice their bodily symptoms. For this subgroup, these bodily symptoms seem to be inherently embarrassing and sufficient to provoke fear and avoidance of social situations (Edelmann, 1990). Therefore, fear of blushing (erytrophobia), trembling (tremophobia), or sweating (hydrophobia) could be considered a subtype of SAD (e.g., Bögels & Stein, in press; Edelmann, 1990; Scholing & Emmelkamp, 1993).

Bögels and Reith (1999) provided evidence for the idea that fear of showing bodily symptoms might be a distinct subtype of SAD. Patients with SAD who were identified as suffering primarily from fear of blushing, trembling, and sweating by clinical interviewers could be discriminated from other patients with SAD by self-reported fear, frequency, and avoidance of blushing, trembling, and sweating. With respect to their *actual* physiologic response, two studies found that SAD patients with fear of blushing blushed more while watching an embarrassing videotape (Gerlach, Wilhelm, Gruber & Roth, 2001) and while performing social tasks (Voncken & Bögels, submitted) than SAD patients without fear of blushing as the primary complaint. However, self-reported blushing propensity and embarrassibility is unrelated to the actual blushing response (Gerlach et al., 2001; Hofmann, Moscovitch, & Kim, 2006). To conclude, the limited evidence does suggest that SAD patients with fear of blushing do blush more than SAD patients without this fear, but self-reported blushing is only weakly associated with the actual physiological blushing response. This may imply that the individuals' fear is, at least partially, rational.

With respect to social behavior in SAD, there is evidence to suggest that patients with SAD are less socially skilled in social interaction (Baker & Edelmann, 2002; Fydreich, Chambless, Perry, Buergener, & Beazley, 1998; Hofmann, Gerlach, Wender, & Roth, 1997; Stopa & Clark, 1993, Voncken & Bögels, in press, but see Clark & Arkowitz, 1975, and Rapee & Lim, 1992, for conflicting results). Furthermore, SAD patients are less able to employ their social skills in anxiety-provoking situations (Schneier, Spitzer, Gibbon, Feyer, & Liebowitz, 1991), and are judged by independent raters to be less likeable and less comfortable to be around (Meleshko & Alden, 1993), and less friendly, warm, interested, likeable (Alden & Wallace, 1995), assertive, relaxed, and attractive (Jones & Russell, 1982; Pilkonis, 1977) than their nonanxious counterparts. Alden and Bieling (1998) suggested that patients with SAD have difficulties reciprocating self-disclosure of their interaction partners. Because social psychology studies have showed that being open about oneself is regarded as more likeable than being closed (Collins & Miller, 1994), a lack of (reciprocal) self-disclosure could contaminate social interaction.

Social skills problems and the contamination of social interaction may particularly play a role in SAD patients with a fear of blushing, trembling, or sweating. In fact, Voncken, Alden, and Bögels (2006) showed that socially anxious individuals suffer from a cognitive bias regarding the effect on one's interaction partner of being open about one's own anxiety symptoms. Socially anxious individuals believe that being open about anxiety symptoms is acceptable for others, but has negative social consequences for them. In other words, individuals with SAD appear to have a double standard for disclosing anxiety symptoms. Such a cognitive bias might be even more prominent in patients who are fearful of blushing, trembling, and sweating. This bias could make these individuals even more hesitant to acknowledge their anxiety symptoms to others and as such contaminate the social interaction.

With regard to treatment strategies for the fear of bodily symptoms, a study by van Son (1978) suggested that social skills training (SST) is more effective than systematic desensitization for patients with fear of blushing. Scholing and Emmelkamp (1993) compared exposure, cognitive therapy (CT), and an integration of exposure and cognitive therapy for SAD patients with a fear of blushing, trembling, or sweating. No significant differences emerged, although exposure and integrated treatment seemed to be slightly superior to CT. However, the small numbers of patients in the treatment cells ($n = 10$) preclude any firm conclusions. Mulkens, Bögels, De Jong, and Louwers (2001) compared task concentration training with exposure in patients with a fear of blushing and found task concentration to be slightly more effective. In task concentration training, participants are taught to redirect their attention away from their bodily symptoms and toward the social task at hand (which often means listening and talking to the interaction partner). To the extent that lack of self-disclosure results from heightened self-focused attention or safety behaviors (Clark, 2001), task concentration might promote (reciprocating) self-disclosure. Bögels (2006) compared applied relaxation to task concentration training in patients with a fear of blushing, trembling, and sweating and found task concentration to be more effective. In sum, preliminary studies examining treatment efficacy in SAD patients with a fear of showing bodily symptoms suggest that SST, task concentration training, and CT are all effective treatments.

Treatment outcome studies in SAD in general have found SST to be efficacious, either as a stand-alone treatment (Mersch, Emmelkamp, Bögels, & Van der Sleen, 1989; Stravinsky, Marks, & Yule, 1982; Wlazlo, Schroeder-Hartwig, Hand, Kaiser, & Münchau, 1990) or combined with exposure (Turner, Beidel, Cooley-Quille, 1995; Turner, Beidel, Cooley, Woody, & Messer, 1994; Van Dam-Baggen & Kraaimaat, 2000). More recently, Herbert and colleagues (2005) combined SST with cognitive behavior group therapy and found the combination to be more effective than cognitive behavior group treatment alone. Meta-analyses in SAD treatment efficacy (reviewed by Rodebaugh, Holaway, & Heimberg, 2004) also showed that SST is as effective as other cognitive behavior therapies, such as exposure, cognitive therapy, or its combination. The mean uncontrolled (within-group) effect size at follow-up for SST reported in meta-analytic studies was .99 (Taylor, 1996; three studies) and .86 (Federoff & Taylor, 2001; four studies). Despite the promising results, few studies have examined the efficacy of SST after intensive research on this topic in the 1970s and 1980s.

The present study was designed to investigate the overall and differential efficacy of SST for SAD patients ($n = 55$) characterized by a fear of bodily symptoms, as compared to CT. The short- and long-term effects of these two treatments on self-reported fear of blushing, trembling, and sweating; general social anxiety; social skills; and general psychopathology were assessed.

METHOD

Participants and Procedure

Patients referred a treatment to the community mental health center in Maastricht, Germany, were screened for a primary diagnosis of SAD using the Structured Clinical Interview for the *DSM-III-R* (SCID, Spitzer & Williams, 1985) by trained clinical

interviewers. The interviewers assessed the fear of blushing, trembling, and sweating by means of the following questions that were added to the SCID social anxiety disorder section: *Do you have the following reaction(s) in [the phobic situation(s)]: blushing, trembling, sweating? If yes, is the fear of [blushing/trembling/sweating] the main problem for which you seek treatment? If yes, if you would not [blush/tremble/sweat] anymore, would your main problem be over?* If patients answered all questions with *yes*, they were assigned a significant fear of blushing and/or trembling, and/or sweating. Of the referred patients with SAD as a primary diagnosis, 44% were classified as meeting the subtype characterized by fear of blushing, trembling, or sweating. Exclusion criteria were: (1) severe other psychiatric problems that might interfere with treatment: substance dependence, psychotic disorder, current suicidal behavior; and (2) having received (cognitive) behavioral treatment for SAD in the preceding 6 months. Patients who used medication for SAD (like benzodiazepines or SSRIs) were encouraged to stop the medication before the start of the therapy, or to keep the medication stable until the first follow-up assessment.

The sample consisted of 55 patients (31 men, 24 women). The mean age was 35.4 (range 19–60 years, $SD = 9.8$). Twenty-three of the participants were single or divorced, and 32 were married or living together. The main complaints of the participants were blushing ($n = 23$), trembling ($n = 15$), sweating ($n = 6$), or a combination of them. The majority ($n = 39$; 71%) of participants had generalized SAD. The mean duration of SAD was 12.9 years ($SD = 11.8$). Twenty-four patients (44%) had received prior treatment(s) for the same complaint. No significant differences emerged between treatment conditions with regards to any of the general characteristics.

Design

Patients were randomly assigned to SST ($n = 28$) or CT ($n = 27$). The assessments were made before treatment (pretest), after 6 sessions (midtreatment), directly after treatment (posttest), 4 weeks after treatment (1-month follow-up), and 12 months after treatment (12-month follow-up). Between posttest and the 1-month follow-up, participants received no further treatment.

Assessment

Trouble and Frequency of Blushing, Trembling, and Sweating. Patients indicated to what extent their daily life was affected by their fear of their pertinent bodily responses (i.e., blushing, trembling, and/or sweating) on a visual analog scale (VAS) from 0 (no trouble at all) to 100 (*maximal trouble*). They also estimated the frequency of the bodily responses during the preceding week, range 0 to *infinite*. Patients only rated the trouble and frequency of those bodily symptoms which were identified as a main problem. Patients identified as phobic with regard to two or all three bodily symptoms rated the trouble and frequency for two or all three symptoms, respectively.

Fear Questionnaire (FQ). The Social Phobia subscale of the FQ (Marks & Mathews, 1979) was used as an index of avoidance of social situations, and consists of five items rated on a 9-point scale. The Dutch translation of the FQ has good psychometric properties (van Zuuren, 1988). The Dutch version assesses both *avoid-*

ance and fear of social situations. Furthermore, participants' main phobia (e.g., *blushing in the presence of other people*) was rated for both avoidance (0 = *never*, 8 = *always*) and fear (0 = *no fear at all*, 8 = *extreme fear*). Avoidance and fear ratings were averaged.

Social Anxiety Self-Statements Inventory (SASSI). The SASSI (Bögels, Mersch, Arntz, Hofman, & van Hout, 1987) is a self-report inventory listing 42 negative self-statements that may appear in social situations. Patients rated the frequency of occurrence of each self-statement on a 5-point scale, ranging from 0 (*never*) to 4 (*very often*). Cronbach's was satisfactory, $\alpha = .93$.

Scale for Interpersonal Behavior (SIB). The SIB (Arrindell, de Groot, & Walburg, 1984) is a 60-item self-report inventory that assesses social skills and assertiveness, with demonstrated reliability and validity. It consists of the subscales Display of Negative Feelings, Expression and Dealing with Personal Limitations, Initiating Assertiveness, and Positive Assertion. All items are rated for perceived distress (0 = *no tension at all*, 4 = *very tense*) and for frequency of social and assertive behaviors (0 = *never*, 4 = *very often*). Distress and frequency ratings were averaged.

Symptom Checklist (SCL-90). The SCL-90 (Derogatis, 1977; Dutch version Arrindell & Ettema, 1986) is a 90-item questionnaire that measures various aspects of psychopathology (such as anxiety, depression, and somatization), with good psychometric properties. Items are rated on a 5-point scale, from 1 (*not at all*) to 5 (*very much*). The total score gives an index of general psychopathology.

Treatment Adequacy. After the first session, participants rated perceived adequacy of treatment, and whether they would recommend this treatment to friends, both on a VAS (0–100).

Treatment

General Aspects. Treatments consisted of 12 weekly 2-hour group sessions. There were 4 groups in each condition. Groups contained six to eight patients. Treatments were conducted by qualified cognitive-behavior therapists (2 male/2 female). Each group was led by two therapists (1 male/1 female). Therapists were crossed with treatments so that each therapist led two CT and two SST groups. To guard for treatment integrity, weekly group supervision sessions took place. Patients were informed that the aim of treatment was to reduce fear of the pertinent bodily symptoms, but not to diminish the frequency of these symptoms per se. Patients who missed a session received an invitation letter for the next session, together with the homework instructions.

Social Skills Training. SST focused on employing adequate social skills while blushing, trembling, or sweating, and dealing with others' reactions on these bodily symptoms. The first sessions consisted mainly of exercises to improve general social skills (e.g., keeping eye contact, starting a conversation, giving compliments). In addition, individual problem situations were analyzed and different alternatives were role-played. For example, a man who was afraid of blushing when a colleague made a joke about sex, learned to respond by telling a joke while blushing. Patients' feared catastrophes were role-played and alternative behaviors were tested. For example, a medical student who feared that patients would laugh at him and ask for his supervisor if they saw him tremble, role-played this situation and developed ways to cope with such reac-

tions. Exercises that were part of the standard program were: (1) task concentration, (2) talking with others about their symptoms, (3) giving acceptable explanations for the symptoms, and (4) expressing feelings of insecurity. In the first half of treatment, exercises and role-plays were restricted to the group sessions, and homework consisted of identifying personal skills deficits and developing alternative behaviors. During the second half of treatment, participants were also stimulated to actually practice the skills learned during treatment in their home environments.

Cognitive Therapy. The first six sessions focused exclusively on dysfunctional beliefs with respect to the bodily symptoms (e.g., *men do not blush*) and how others would evaluate the symptoms (e.g., *if people see me tremble, they will think I'm an alcoholic*). Patients learned to identify, analyze, and challenge their own dysfunctional thoughts as well as those of other group members. Homework assignments concerned identifying and challenging dysfunctional thoughts with respect to (fear of showing) bodily symptoms. During the second half of treatment, patients carried out behavioral experiments to test their dysfunctional thoughts. For example, patients tested the hypothesis: *when I blush, everybody will look at me* by blushing during a gathering, and observing (counting) how many people looked at them and how many did not. Challenging the following specific dysfunctional beliefs was standard, as these beliefs were held by most patients: (1) being the center of everyone's attention; (2) viewing others as criticizing and evaluating; (3) mind reading: *I know what they think*, and *they know what I think*; (4) physical symptoms can be controlled; and (5) one-dimensional evaluation, for example, *my ability as a manager is exclusively dependent on a secure appearance*. Finally, underlying assumptions regarding fear of bodily symptoms (e.g., *unless my performance is perfect, I will not be accepted by others*, or *showing your feelings is dangerous, others will abuse this information*) were identified, their historical background discussed, and, if necessary, modified.

Data Analytic Approach

Four patients, all from the SST condition, did not complete the 12-month follow-up; three of them had moved or could not be reached, and one person refused. For these four patients, their last assessment (1-month follow-up) was carried forward, assuming no further change. Five patients dropped out (4 during CT, 1 during ASST); one after four, one after five, and three after six sessions. Again, their last assessments were carried forward for the intent-to-treat analysis. The frequency of occurrence of bodily symptoms was not normally distributed. These data were normalized by taking the square root of this variable.

Difference scores from the pretreatment assessment were subjected to four 2 (CT/SST) \times 7 (outcome indices) MANOVAs, and were followed up by ANOVAs in case of overall significance.

To determine whether patients have returned to normal functioning, three measures were selected: main phobia (FQ), social phobia (FQ), and trouble of pertinent bodily symptoms. By means of chi-square tests, it was evaluated whether clinically significant change rates differed between the two treatments. When norms of a functional population were available, we used the point that lies half-way between the mean of the functional and dysfunctional population as the cut-off point for recovery. For social phobia (FQ) a cut-off score of 16 was established (using the mean of a nonclinical com-

munity sample from Arrindell and Buikhuisen, 1992). For trouble with blushing, trembling, and sweating the cut-off point was set at 51 (using the mean of a normal student population, $n = 160$). For the main phobia, no norms of a functional population are available. Therefore, the cut-off point was estimated following the recommendations of Jacobson and Truax (1991; mhu (mean of the dysfunctional population) minus 2 SDs , i.e., 3). Within-group effect sizes of changes in the trouble of bodily symptoms, main phobia, and social phobia were computed as an indication of treatment effect at different time contrasts, according to $(M_{pre} - M_{post})/SD(M_{pre} - M_{post})$.

RESULTS

Treatment Adequacy and Descriptive Data

No differences were found in treatment integrity between SST and CT. Patients judged both treatments as adequate on a 0–100 mm VAS for their complaints (SST: $M = 67.0$; $SD = 23.1$; CT: $M = 60.3$; $SD = 21.5$, $p > .1$), and would recommend both to their friends: SST = 72.1 ($SD 24.5$), CT = 73.4 ($SD = 17.5$), $p > .1$. Although treatments consisted of 12 sessions, the mean number of sessions attended was 10.5 ($SD = 1.8$) for SST, and 9.7 ($SD = 2.3$) for CT, $p > .1$. Six patients (13%) had additional treatment between the 1-month and the 12-month follow-up assessment. After SST, one patient had CT, one exposure and counseling, and one assertiveness training. After CT, two received counseling and one marital therapy. Since additional treatment was equally divided between conditions, and the group was small, no further analyses were conducted with respect to additional treatment.

Effects of Treatments

For all outcome measures, means and standard deviations are reported in Table 1. MANOVAs indicated that, in general, treatments were effective, from pretest to midtreatment, $F(7, 47) = 5.9$, $p < .0001$; from pretest to posttest, $F(7, 47) = 15.2$, $p < .0001$, from pretest to 1-month follow-up, $F(7, 47) = 12.5$, $p < .0001$, and from pretest to 12-month follow-up, $F(7, 47) = 15.5$, $p < .0001$.

No significant differences emerged between both treatment conditions from pretest to midtreatment, $F(6, 48) = 1.1$; $p > .1$; from pretest to posttest, $F(6, 48) = .6$, $p > .1$; from pretest to 1-month follow-up, $F(6, 48) = 1.3$, $p > .1$), and from pretest to 12-month follow-up, $F(6, 48) = .8$, $p > .1$. Thus, treatment success was independent of treatment condition.

The percentages of patients who demonstrated clinically significant change are presented in Table 2. No differences were found between treatment conditions for fear of blushing, trembling, or sweating at 1-month follow-up, $\chi^2(1) = 1.5$, $p > .1$, and 1-year follow-up, $X^2(1) < 1$; main phobia at FUI, $X^2(1) < 1$, and FUII, $X^2(1) < 1$; and social phobia at FUI, $X^2(1) < 1$, and FUII, $X^2(1) < 1$. Effect sizes of improvement were large ($> .8$, Cohen, 1977) for both treatment conditions (see Table 2).

TABLE 1. Means and Standard Deviations on the Seven Outcome Variables: Pretreatment, Midtreatment, Posttreatment, 1 Month Follow Up, and 12 Months Follow-Up, Cognitive Therapy (*n* = 27) and Social Skills Training (*n* = 28).

Variable	Pre		Mid		Post		1-mo. F/U		12-mo. F/U	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
One week frequency of bodily symptoms										
CT	2.5	1.9	2.2	1.3	2.1	1.6	1.7	1.4	2.1	1.6
SST	2.3	1.7	2.1	1.1	1.8	.9	1.7	.9	1.4	.9
Trouble of bodily symptoms										
CT	83.7	22.1	73.0	21.1	56.7	28.7	49.9	30.7	46.7	29.9
SST	88.0	14.2	74.3	23.2	59.8	25.9	58.2	24.9	43.0	27.9
Main phobia (FQ)										
CT	5.3	1.7	5.3	1.5	4.0	1.6	4.2	1.6	3.7	1.5
SST	5.5	1.5	5.2	1.5	4.2	1.7	4.3	1.7	3.8	1.6
Social phobia (FQ)										
CT	20.2	6.1	17.2	6.5	14.8	5.5	14.7	6.1	14.4	6.2
SST	20.8	6.2	18.0	5.9	15.9	6.0	15.8	6.1	15.1	6.4
Negative social cognitions (SASSI)										
CT	83.2	25.0	80.4	23.0	65.6	21.9	64.1	20.5	64.1	28.8
SST	92.8	25.4	79.6	26.4	70.6	28.3	67.3	26.3	66.5	39.2
Social skills (SIB)										
CT	119.4	21.0	116.7	18.2	110.2	18.3	112.6	19.2	102.3	22.6
SST	120.1	21.4	112.3	20.4	107.1	20.3	104.8	21.1	101.4	24.1
General psychopathology (SCL-90)										
CT	165.4	35.3	156.9	38.0	142.3	31.4	136.6	33.5	140.6	42.4
SST	178.9	56.7	172.2	60.3	163.0	58.7	157.4	50.1	148.4	49.5

Note. FQ = Fear Questionnaire, SASSI = Social Anxiety Self-Statements Inventory, SIB = Scale for Interpersonal Behavior, SCL-90 = Symptom Checklist.

TABLE 2. Percentage of Patients Showing Clinically Significant Change and Effect Sizes of Change of Cognitive Therapy and Social Skills Training at 1 Month and at 12 Months Follow-up

	Clin. sign. change		Effect size	
	1-mo. F/U	12-mo. F/U	1-mo. F/U	12-mo. F/U
Trouble of bodily symptoms				
CT	52%	63%	1.2	1.3
SST	32%	71%	1.2	1.6
Main Phobia (FQ)				
CT	33%	48%	.8	.9
SST	32%	39%	.7	1.1
Social Phobia (FQ)				
CT	56%	63%	1.1	1.0
SST	46%	54%	.9	.9

Note. FQ = Fear Questionnaire.

Post Hoc Analyses

Symptom Specificity. To explore whether treatment efficacy was related to the type of bodily responses, we distinguished between two groups: patients with a fear of blushing ($n = 23$) and patients with a fear of trembling ($n = 15$). Because the fear of sweating was relatively uncommon ($n = 6$), these patients were excluded, as were patients with a combination of blushing and trembling ($n = 11$). A MANOVA was run with the treatment condition (CT vs. SST) and type of complaint (Blushing vs. Trembling) as between factors and the difference scores between the pretest and the 1-month follow-up assessment of the seven outcome measures as dependent variables. No difference in overall treatment effect was found between the two complaints, $F(7, 28) = 1.0, p > .1$, and no interaction between type of complaint and treatment condition, was evident $F(7, 28) = .5, p > .1$.

Effect of Prior Treatment. A large percentage of patients (44 %, $n = 24$) had received prior treatment for the same complaint before entering this study. A MANOVA revealed no difference in treatment efficacy for participants with and without prior treatment at the 1-month follow-up assessment, $F(7, 45) = 1.1, p > .1$, and no group by condition interaction, $F(7, 45) = 1.5, ps > .1$.

Group Cohesion and Treatment Effects. To explore whether group dynamics influenced treatment, therapists rated the level of group cohesion on a VAS. Inter-rater agreement was high, $r = .84$. Group cohesion did not correlate with treatment effect for any of the measures. Correlations ranged from $-.45$ to $.25$ (all $ps > .1$), suggesting that group cohesion did not influence treatment efficacy.

DISCUSSION

Our main purpose with this study was to examine the relative efficacy of SST and CT for SAD patients with fear of blushing, sweating, or trembling. The results showed: (1) both treatments effectively reduced specific (fear of blushing, trembling, and sweating)

and general (social anxiety and psychopathology) complaints at short- and longer-term, and (2) no different treatment efficacy was found.

To our knowledge, this study is the first to compare SST with CT for SAD patients with fear of blushing, trembling, or sweating. Several explanations can be offered for the lack of differential effects across treatment conditions. First, the general effects of a structured therapy in a homogeneous group (such as experiencing that other group members have similar symptoms) may have overruled the effects of specific treatment methods. Secondly, although SST primarily focused on social skills, it may have also influenced dysfunctional beliefs (e.g., by role-playing a feared outcome one may learn that the chance of such an outcome is low). Similarly, CT may have influenced social skills by modifying the tendency to underestimate one's social competency. In fact, Newman, Hofmann, Trabert, Roth and Taylor (1994) showed that behavioral treatment leads to cognitive changes in SAD patients.

Although SST has been found to be an effective treatment method for SAD, during the last few decades only few treatment-outcome studies included SST. Meta-analyses on the effects of different treatments for SAD in general showed that SST and CT are equally effective (Rodebaugh et al., 2004). The present results point into the same direction. However, only comparative treatment outcome trials can determine whether SST is as effective as other effective approaches in SAD patients with fear of showing bodily symptoms, such as task concentration training (Bögels, 2006; Mulkens et al., 2001).

Interpersonal models of social anxiety suggest that SAD is associated with difficulties in (reciprocal) self-disclosure (Alden & Taylor, 2004), and particularly with lack of openness about one's own insecurities (Voncken et al., 2006). Fear of showing bodily symptoms may be particularly associated with lack of disclosure about this fear. Because SST patients are trained to disclose their fear of bodily symptoms, the efficacy of SST supports such interpersonal models. Another possible explanation for the efficacy of SST for fear of blushing, trembling, or sweating can be inferred from the hypothesis that being aware of one's bodily symptoms makes people excessively self-aware (e.g., Clark & Wells, 1995). It has been demonstrated that heightened self-awareness interferes with social behavior and increases anxiety (Bögels & Mansell, 2004). During SST, patients learn to focus attention on tasks at hand and on other people rather than on their own bodily symptoms. This ingredient is likely to reduce self-awareness during social interactions, which in turn reduces fear of bodily symptoms.

Concerning the overall efficacy of the treatments, the effect sizes were in the range of those reported in meta-analyses of SAD treatment (Rodenbough et al., 2004). Dropout rates (9%) were lower than the mean drop-out rate for cognitive and behavioral treatments for SAD (12–18%, Taylor, 1996). Follow-up analyses showed that initial improvement was maintained, and further improvement was observed on specific measures of the somatic fear: trouble of bodily symptoms and main phobia. Whereas only half of the patients showed clinically significant improvement 1 month after treatment, 1 year after treatment three quarters of the patients showed clinically significant change regarding the extent to which their bodily symptoms impeded their functioning. Taken together, the results suggest that the therapies were accepted well and resulted in strong treatment gains that were maintained at follow up. This supports the use of both SST and CT for SAD patients with fear of blushing, trembling, and sweating.

A first limitation of this study concerns the reliance on self-report measures. It would be interesting to assess whether SST affects actual social behavior, expression of insecurity, anxiety symptoms, and being liked by others. Second, we did not assess adherence to the treatment protocol and competency of the therapists by blind and independent raters; therefore, we cannot rule out that the results are due to allegiance effects. Third, conclusions with respect to the efficacy of treatments are limited by the lack of waiting list or attention and/or group support control condition, so results are not corrected for the effects of time and attention. With respect to waitlist, another study concerning the same type of SAD patients (Bögels, 2006) showed no improvement during a 3-month wait-list. However, the placebo control conditions, including group support, led to a substantial decrease in social anxiety (effect size of .45, Federoff & Taylor, 2001).

Various forms of interpersonal treatment for SAD have been evaluated (e.g., Hoffart, 2005), or are currently being investigated. This study supports the idea that improving patients' interpersonal behavior such as being open, is an effective way to treat SAD.

REFERENCES

- Alden, L. E., & Bieling, P. (1998). Interpersonal consequences of the pursuit of safety. *Behaviour Research and Therapy*, *36*, 53–64.
- Alden, L. E., & Taylor, C. T. (2004). Interpersonal processes in social phobia. *Clinical Psychology Review*, *24*, 857–882.
- Alden, L. E., & Wallace, S. T. (1995). Social phobia and social appraisal in successful and unsuccessful social interactions. *Behaviour Research and Therapy*, *33*, 497–505.
- Arrindell, W.A., & Buikhuisen, M. (1992). Dissimulation and sex differences in self-assessment of fears: A brief note. *Behaviour Research and Therapy*, *30*, 307–311.
- Arrindell, W.A., & Ettema, J.H.M. (1986). *SCL-90, Handleiding bij een multidimensionele psychopathologie indicator [Manual of the Dutch version of the Symptom Checklist]*. Lisse: Swets & Zeitlinger.
- Arrindell, W.A., De Groot, P.M., & Walburg, J.A. (1984). *De Schaal voor Interpersoonlijk Gedrag: SIG [Manual of the Scale of Interpersonal Behavior: SIB]*. Lisse: Swets & Zeitlinger.
- Baker, S. R., & Edelman, R. J. (2002). Is social phobia related to lack of social skills? Duration of skill-related behaviours and ratings of behavioural adequacy. *British Journal of Clinical Psychology*, *41*, 243–257.
- Bögels, S.M. (2006). Task concentration training versus applied relaxation for social phobic patients with fear of blushing, trembling, and sweating. *Behaviour Research and Therapy*, *44*, 1199–1210.
- Bögels, S.M., & Mansell, W. (2004). Attention processes in the maintenance and treatment of social phobia: Hypervigilance, avoidance and self-focused attention. *Clinical Psychology Review*, *24*, 827–856.
- Bögels, S.M., Mersch, P.P.A., Arntz, A.R., Hofman, A., & Van Hout, W.J.P.J. (1987). *Construction and validation of a self-statement questionnaire for social phobics*. Paper presented at the Congress of the European Association of Behaviour Therapy, Amsterdam.
- Bögels, S.M., & Reith, W. (1999). Validity of two questionnaires to assess social fears: The Dutch Social Phobia and Anxiety Inventory and the Blushing, Trembling, and Sweating Questionnaire. *Journal of Psychopathology and Behavioral Assessment*, *21*, 51–66.
- Bögels, S.M., & Stein, M. (in press). Social anxiety disorder: Towards the DSM-IV. *Monographs of the American Psychiatric Association*.
- Clark, J.V., & Arkowitz, H. (1975). Social anxiety and self-evaluation of interpersonal performance. *Psychological Reports*, *36*, 211–221.

- Clark, D. M., Ehlers, A., McManus, F., Hackmann, A., Fennell, M., Campbell, H., et al. (2003). Cognitive therapy versus fluoxetine in generalized social phobia: a randomized placebo-controlled trial. *Journal of Consulting and Clinical Psychology, 71*, 1058–1067.
- Clark, D.M., & Wells, A. (1995). A cognitive model of social phobia. In R.G. Heimberg, M.R. Liebowitz, D.A. Hope, & F.R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69–93). New York: Guilford.
- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.
- Collins, N. L., & Miller, L. C. (1994). Self-disclosure and liking: A meta-analytic review. *Psychological Bulletin, 116*, 457–475.
- Derogatis, L.R. (1977). *SCL-90 administration, scoring and procedures manual I for the R (revised) version and other instruments of the psychopathology rating scale series*. Baltimore, MD: Clinical Psychometrics Research Unit, John Hopkins University School of Medicine.
- Edelmann, R.J. (1990). *Coping with blushing*. London: Sheldon Press.
- Federoff, I.C., & Taylor, S. (2001). Psychological and pharmacological treatments of social phobia: A meta-analysis. *Journal of Clinical Psychopharmacology, 21*, 311–324.
- Fydrich, T., Chambless, D. L., Perry, K. J., Buergener, F., & Beazley, M. B. (1998). Behavioral assessment of social performance: A rating system for social phobia. *Behaviour Research and Therapy, 36*, 995–1010.
- Gerlach, A.L., Wilhelm, F.H., Gruber, K., & Roth, W.T. (2001). Blushing and physiological arousability on social phobia. *Journal of Abnormal Psychology, 110*, 247–258.
- Heimberg, R.C., Dodge, C.S., Hope, D.A., Kennedy, C.R., Zollo, L.J., & Becker, R.E. (1990). Cognitive behavioral group treatment for social phobia: Comparison with a credible placebo control. *Cognitive Therapy and Research, 14*, 1–23.
- Herbert, J.D., Gaudiano, B.A., Rheingold, A.A., Myers, V.H., Dalrymple, K., & Nolan, E.M. (2005). Social skills training augments the effectiveness of cognitive behavioral group therapy for social anxiety disorder. *Behavior Therapy, 36*, 125–138.
- Hoffart, A. (2005). Interpersonal therapy for social phobia: Theoretical model and review of the evidence. In M.E. Abelian (Ed.), *Focus on psychotherapy research* (pp. 121–137). New York: Nova Science.
- Hofmann, S. G., Gerlach, A., Wender, A., & Roth, W. T. (1997). Speech disturbances and gaze behavior during public speaking in subtypes of social phobia. *Journal of Anxiety Disorders, 11*, 573–585.
- Hofmann, S. G., Moscovitch, D. A., & Kim, H.-J. (2006). Autonomic correlates of social anxiety and embarrassment in shy and nonshy individuals. *International Journal of Psychophysiology, 61*, 134–142.
- Jacobson, N.S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 59*, 12–19.
- Jones, W. H., & Russell, D. (1982). The Social Reticence Scale: An objective instrument to measure shyness. *Journal of Personality Assessment, 46*, 629–631.
- Marks, I.M., & Mathews, A.M. (1979). Brief standard self-rating for phobic patients. *Behaviour Research and Therapy, 17*, 59–68.
- Meleshko, K. G., & Alden, L. E. (1993). Anxiety and self-disclosure: Toward a motivational model. *Journal of Personality and Social Psychology, 64*, 1000–1009.
- Mersch, P.P.A, Emmelkamp, P.M.G., Bögels, S.M., & van der Sleen, J. (1989). Social phobia: Individual response patterns and the effects of behavioral and cognitive interventions. *Behaviour Research and Therapy, 27*, 421–434.
- Mulkens, S., Bögels, S.M., De Jong, J., & Louwers, J. (2001). Fear of blushing: Effects of task concentration training versus exposure in vivo on fear and physiology. *Journal of Anxiety Disorders, 15*, 413–432.
- Newman, M.G., Hofmann, S.G., Trabert, W., Roth, W.T., & Taylor, C.B. (1994). Does behavioral treatment of social phobia lead to cognitive changes? *Behavior Therapy, 25*, 503–517.
- Pilkonis, P. A. (1977). The behavioral consequences of shyness. *Journal of Personality, 45*, 596–611.
- Rapee, R.M., & Lim, L. (1992). Discrepancy between self- and observer-ratings of performance in social phobics. *Journal of Abnormal Psychology, 101*, 728–731.
- Rodebaugh, T.L., Holaway, R.M., & Heimberg, R.G. (2004). The treatment of social anxiety disorder. *Clinical Psychology Review, 24*, 883–980.
- Schneier, F.R., Spitzer, R.L., Gibbon, M., Fyer, A.J., & Liebowitz, M.R. (1991). The relationship of social phobia subtypes and avoidant personality disorder. *Comprehensive Psychiatry, 32*, 496–502.

- Scholing, A., & Emmelkamp, P.M.G. (1993). Cognitive and behavioral treatments of fear of blushing, trembling or sweating. *Behaviour Research and Therapy, 31*, 155–170.
- Spitzer, R.L., & Williams, J.B.W. (1985). *Structured clinical interview for DSM-III-R. Patient version*. New York: New York State Psychiatric Institute, Biometrics Research Division.
- Stopa, L., & Clark, D.M. (1993). Cognitive processes in social phobia. *Behaviour Research and Therapy, 31*, 255–267.
- Taylor, S. (1996). Meta-analysis of cognitive-behavioral treatments for social phobia. *Journal of Behaviour Therapy and Experimental Psychiatry, 27*, 1–9.
- van Son, M.J.M. (1978). *Sociale vaardigheidstherapie, gedragstherapie en sociaal gedrag [Social skills-training, behavior therapy and social behavior]*. Houten: Swets & Zeitlinger.
- van Zuuren, F.J. (1998). The fear questionnaire: Some data on validity, reliability, and lay-out. *British Journal of Psychiatry, 153*, 659–662.
- Voncken, M. J., Alden, L. E., & Bögels, S. M. (2006). Hiding anxiety versus acknowledgment of anxiety in social interaction: Relationship with social anxiety. *Behaviour Research and Therapy, 44*, 1673–1679.
- Voncken, M. J., & Bögels, S. M. (in press). Social performance deficits in social anxiety disorder: Reality during conversation and biased perception during speech. *Journal of Anxiety Disorders*.
- Voncken, M. J., & Bögels, S. M. (submitted). Psycho-physiological responses in patients with social anxiety disorder.