

Shorter communication

# Task concentration training versus applied relaxation, in combination with cognitive therapy, for social phobia patients with fear of blushing, trembling, and sweating

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## Abstract

Social phobia patients with fear of blushing, trembling, sweating and/or freezing as main complaint ( $N = 65$ ) were randomly assigned to either task concentration training (TCT) or applied relaxation (AR) both followed by cognitive therapy (CT). Measurements took place before and after wait-list, after TCT or AR (within-test), after CT (post-test), at 3-months and at 1-year follow-up. Effects were assessed on fear of showing bodily symptoms (the central outcome variable), social phobia, other psychopathology, social skills, self-consciousness, self-focused attention, and dysfunctional beliefs. No changes occurred during wait-list. Both treatments were highly effective. TCT was superior to AR in reducing fear of bodily symptoms and dysfunctional beliefs at within-test. This difference disappeared after CT, at post-test and at 3-months follow-up. However, at 1-year follow-up the combination TCT–CT was superior to AR–CT in reducing fear of bodily symptoms, and effect sizes for TCT–CT reached 3. Furthermore, at all assessment moments TCT or the combination TCT–CT was superior to AR–CT in reducing self-consciousness and self-focused attention. The superior long-term effect of TCT on fear of showing bodily symptoms is explained by lasting changes in attentional focus.

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*Keywords:* Task concentration training; Applied relaxation; Self-focused attention; Social phobia; Blushing

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## Introduction

Fear of negative evaluation is central to social phobia. Whereas many social phobic patients (SPs) fear rejection because of their behaviour, SPs with fear of blushing, trembling, or sweating typically fear rejection when others notice their bodily symptoms. For this subgroup these bodily symptoms seem inherently embarrassing and sufficient to provoke fear and avoidance of social situations. That is, the bodily symptoms are not only attendant on feared situations, but become a source of fear themselves (e.g., Evans, 1972). The phobic properties of bodily symptoms such as blushing may result from several shared features: they are uncontrollable, visible, and may interfere with social behaviour, either directly (e.g., hand tremor while drinking at a party) or indirectly via increased self-focussed attention (e.g., focussing on blushing interferes with listening).

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Patients with fear of showing bodily symptoms often impress as highly preoccupied or obsessoid. They resemble body-dysmorphic patients in their preoccupation with an imagined or grossly exaggerated defect (Neziroglu & Yaryura-Tobias, 1993). Their somatic fixation appears from seeking endoscopic thoracic sympaticotomy (Rex, Drott, Claes, Göthberg, & Dalman, 1998), and frequent visits to general practitioners, skin doctors, and internal specialists for blushing and sweating (Gerlach & Ultes, 2004).

Several authors argued that fear of blushing (erytrophobia), trembling (tremophobia), or sweating (hydrophobia) should be considered a social phobia subtype (e.g., Bögels, Mulkens, & de Jong, 1997; Edelman, 1990; Scholing & Emmelkamp, 1993). In line, Bögels and Reith (1999) found that SPs suffering from fear of bodily symptoms could be discriminated from other SPs by self-reported fear, frequency, and avoidance of bodily symptoms. More important, with respect to their actual physiologic response, Gerlach, Wilhelm, Gruber, and Roth (2001) found SPs with erotrophobia to blush more while watching an embarrassing video than SPs without primary blushing fear.

Heightened self-focussed attention is assumed to play an important maintaining role in social phobia (e.g. Hope, Gansler, & Heimberg, 1989) and research supporting this is accumulating (Bögels & Mansell, 2004). Heightened self-focussed attention may be especially crucial for SPs with fear of bodily symptoms, since salient physiological arousal serves to focus attention inwards, and heightened self-focussed attention increases awareness of physiological reactions (Bögels et al., 1997).

Given the potentially detrimental effects of heightened self-focussed attention on SPs with fear of bodily symptoms, we explored a new strategy, task concentration training (TCT), which aims at redirecting attention away from bodily symptoms to the social task. Mulkens, Bögels, de Jong, and Louwers (2001) compared TCT with exposure-in-vivo in 31 sub-clinical erytrophobics. TCT was as effective as exposure-in-vivo, yet follow-up, dysfunctional beliefs about blushing decreased more after TCT. This study takes a further step to evaluate TCT in a larger group of clinical SPs with fear of various bodily symptoms: blushing, trembling, sweating or freezing. TCT is compared to another coping strategy for fear of bodily symptoms, applied relaxation (AR; Öst, 1987).

The rationale for choosing AR as comparison is that bodily symptoms may result from high bodily tension that lowers the threshold for bodily symptoms. As the goal of AR is to reduce bodily tension, and apply relaxation in fear-provoking situations (e.g., while blushing), it seems an appropriate intervention for patients with fear of bodily symptoms. Moreover, AR was effective compared to evidence-based psychological treatments for generalised anxiety, panic disorder, and general social phobia (e.g. Arntz, 2003; Arntz & van den Hout, 1996; Jerremalm, Jansson, & Öst, 1986).

For a sub-clinical population (Mulkens et al., 2001), TCT as a stand-alone treatment was quite effective ( $d = 1.4$ ). However, in this study cognitive therapy (CT) followed after TCT and AR for three reasons. First, since fear of bodily symptoms is severe and persistent (Edelman, 1990), coping strategies such as TCT and AR might not be sufficient. Second, patients overestimate the visibility (McEwan & Devins, 1983) and consequences (Bögels & Reith, 1999) of their imagined defect. These dysfunctional beliefs thought to be central to the disorder are directly challenged in CT. Third, cognitive models of social phobia (e.g. Clark & Wells, 1995) predict that cognitive change is not caused, but *facilitated* by outward-focussed attention. The present design allows for a direct test of the prediction that TCT plus CT produces greater change in dysfunctional beliefs than AR plus CT.

## Method

### Participants

Patients aged 17–65, referred to the Mental Health Centre, Maastricht with a primary diagnosis of social phobia and a main complaint of fear of blushing, trembling, sweating and/or freezing were included. Of 156 screened SPs, 49% (76) had a predominant fear of bodily symptoms. Patients with fear of freezing had a main fear of going blank because of physiological symptoms, e.g., speak block because lack of breath. Exclusion criteria were: substance dependence, psychotic disorder, acute suicidal behaviour, and borderline personality disorder. Patients were screened using the structured clinical interview for DSM-IV axis-I (SCID-I, First, Spitzer, Gibbon, & Williams, 1997), as well as DSM-IV personality disorders (SCID-II, First, Spitzer,

Gibbon, Williams, & Benjamin, 1994), by trained clinicians. Satisfactory inter-rater reliability of the SCID has been demonstrated (e.g. Zanarini & Frankenburg, 2001). Attrition rate was 14% (11), reasons were: research (6), alcohol dependence (2), improved during wait-list (1), moving (2). Sixty-five patients started treatment and signed informed consent, 33 received TCT–CT and 32 AR–CT. Eight patients (12%) dropped out during treatment, 3 during AR, 2 during TCT, 2 after completing TCT, and 1 during CT (of TCT–CT).

### Procedure

Patients were randomly assigned to TCT or AR, after which all received CT. There were six assessment moments: before natural wait-list (WL), after WL (pre-test), after TCT or AR (within), after CT (post-test), 3 months (follow-up I) and 1 year (follow-up II) after treatment. Patients who did not complete treatment were further assessed. Questionnaire assessments took place on a computer.

### Assessments

*Fear of showing bodily symptoms.* This central fear was measured using the blushing, trembling, sweating and freezing questionnaire (BTS-Q, Bögels & Reith, 1999). The questionnaire measures in seven subscales the following aspects of fear of showing bodily symptoms: severity of fear, physical symptoms, behavioural problems, avoidance, positive beliefs, negative beliefs, and frequency. The BTS-Q possesses good internal reliability, homogeneity of subscales range from .80 to .98, and excellent discriminant validity, that is, the BTS-Q discriminates SPs from normals ( $d = 2.0$ ) and SPs with fear of showing bodily symptoms from SPs without such a primary fear ( $d = 1.3$ ) (Bögels & Reith, 1999).

*General social phobia.* To assess other aspects of social phobia, patients completed the social phobia and anxiety inventory (SPAI, Turner, Beidel, Dancu, & Stanley, 1989), the subscales main phobia and social phobia of the fear questionnaire (Marks & Mathews, 1979), the subscale social anxiety of the self-consciousness scale (SCS, Dutch validation Bögels, Alberts, & de Jong, 1996), the subscale social sensitivity of the symptom checklist (SCL-90, Dutch validation Arrindell & Ettema, 1986), and the fear of negative evaluation scale (FNE-short, Leary, 1983). All these questionnaires possess satisfactory psychometric qualities.

*General psychopathology.* General psychopathology was measured with the SCL-90 subscales generalised anxiety, agoraphobia, depression, somatisation, obsessive-compulsivity, hostility, sleeping problems, and other problems, the SPAI subscale agoraphobia, and the fear questionnaire subscales agoraphobia and blood/Injury.

*Social skills.* Self-reported social skills were assessed with the scale for interpersonal behaviour-short version (SIB, Arrindell, de Groot, & Walburg, 1984), a reliable and valid measure.

*Attention.* State self-focussed attention was measured with the self-focussed attention scale (SFA, Bögels et al., 1997), which consists of the subscale SFA-arousal measuring a tendency to focus on own arousal during social situations, and SFA-performance, measuring self-focussing on own social behaviour. Psychometric analysis (Bögels et al., 1997) demonstrated satisfactory internal reliability (homogeneity SFA-Arousal .86, SFA-performance .78), concurrent validity (substantial correlations with SPAI-social phobia and Public SC), and factorial validity (the predicted two-factor solution emerged explaining 58% of the variance). The SCS subscales public and private self-consciousness assess a dispositional tendency to be aware on oneself, privately or publicly.

*Central causal misinterpretations (CCMs).* In an introductory session therapists helped patients formulate five main idiosyncratic beliefs about their bodily symptoms (e.g. “If I blush, everybody will find me weak”). Formulations were checked during supervision. Before and after each therapy session patients rated their conviction of their CCMs on visual analogue scales.

### Treatment

*General aspects.* AR, TCT, and CT each consisted of eight 45–60 min weekly sessions. Cognitive-behaviour therapists (14) delivered the treatments. Lars-Göran Öst and David M. Clark provided initial training in

respectively AR and CT for social phobia, and the author trained the therapists in TCT and in CT for fear of bodily symptoms. The author supervised the therapists weekly. To control for exposure effects, the amount of role-play and in-vivo exposure was kept equal across TCT and AR. Neither challenging negative beliefs nor skills training took place in both conditions.

*Task concentration training (TCT).* During TCT, patients learn to redirect attention away from their bodily symptoms to the task at hand, as a way of coping with bodily symptoms. At home and in therapy, patients practice TCT first in non-social non-threatening exercises (e.g., walking through a quiet forest and paying attention to all aspects of the forest), and then in hierarchically build-up social situations. See for details on TCT Bögels et al. (1997).

*Applied relaxation.* AR teaches patients to relax in anticipation of, during and after social situations and particularly while having bodily symptoms, in order to cope with such symptoms. In therapy and at home they practice with, in sequence, muscle tension and relaxation, release only, fast relaxation, cue-controlled relaxation, differential relaxation, and AR, the latter in hierarchy-build up exercises. See for details on AR Öst (1987).

*Cognitive therapy.* After TCT or AR, all patients received CT. Patients learned to identify their negative beliefs concerning bodily symptoms, challenge them using Socratic dialogue, and conduct behavioural experiments (Beck, Rush, Shaw, & Emery, 1980). Patients interrogated their environment concerning negative beliefs about bodily symptoms (Clark, 1997). Also, applying mirror- and video-feedback distorted views about the visibility of symptoms were corrected.

#### *Data reduction, missing values, and analysis*

First, 7 patients (11%) who completed treatment had few missing values, which were estimated based on regression models using available data of that measurement moment and the pattern of change of the individual, the group mean as well as the pattern of change of the whole group within condition on the missing variable. For treatment dropouts who refused further assessments, last assessments were carried forward (“intent to treat”), assuming no change.

Second, the BTS-Q was analysed as follows. For patients with blushing as main complaint, their responses on severity of fear of blushing, avoidance of blushing, physical symptoms of blushing, and frequency of blushing were used for further analyses. The same was done for sweating, trembling and freezing. For patients with two or more complaints responses of the relevant complaints were averaged (see Bögels & Reith, 1999).

Third, composite scores were made. The BTS-Q composite, the *central* outcome variable, consisted of the discriminant function distinguishing SPs with fear of bodily symptoms from normal individuals: .88 severity, +.64 negative beliefs, +.47 behavioural problems, +.46 physical complaints, +.45 avoidance, +.32 frequency, −.17 positive beliefs (based on data of Bögels & Reith, 1999). In case significant differences occurred on the composite BTS-Q, results were post-hoc analysed for all subscales. The “general social phobia” composite contains subscales that measure other aspects of social phobia. The “other psychopathology” composite consists of subscales measuring other psychopathology (see assessments). Private and public SC, SFA, and CCMs are considered process of change variables.

Fourth, no pre-test differences were observed between conditions on any of the 9 variables, allowing a planned contrasts design. The following contrasts were made: WL–pre-test (stability analyses), pre-test–within (comparing TCT and AR), pre-test–post-test (comparing TCT–CT versus AR–CT), pre-test–follow-up I and pre-test–follow-up II (long-term differences between treatment packages). In order to avoid chance findings based on correlated variables, planned contrasts MANOVAs were run, and *only* in case of overall significant differences ( $p < .05$ ), ANOVAs were run on separate variables to investigate which variables contributed to the overall difference. Borderline significant results on the ANOVAs ( $p < .1$ ) are mentioned as they contribute to overall differences.

## **Results**

### *Patient characteristics*

While most patient characteristics (Table 1) did not differ across conditions, more AR patients reported prior social anxiety treatment,  $\chi^2(1, N = 65) = 4.8$ ,  $p < .05$ , and met criteria for axis-II disorders,

$\chi^2(1, N = 54) = 3.2, p = .07$ . Therefore, it was checked whether these variables affected outcome or interacted with treatment condition.

### Stability

Mean waiting time (17.6 weeks, SD 10.0, range 4–44) was comparable to mean treatment time. No improvement occurred between WL and pre-test (see Table 2). Therefore, improvement during the treatment period can be regarded as resulting from treatment rather than time and assessment. Measures possessed good test–retest reliabilities.

### Treatment results

Table 3 presents all dependent variables at five assessment moments.

MANOVA revealed a significant main effect from pre-test to within,  $F_{Hot.}(9, 55) = 9.1, p < .001$ . Post-hoc ANOVAs showed that treatment effects were significant for 7 of the 9 variables, no effect was found for private and public SC. An overall effect for condition occurred,  $F_{Hot.}(9, 55) = 3.0, p < .01$ . Post-hoc ANOVAs showed significant greater reductions after TCT on BTS-Q ( $p < .06$ ), SFA-arousal ( $p = .01$ ) and CCMs ( $p < .05$ ). Subscale analysis on the BTS-Q revealed that TCT more effectively reduced negative beliefs,  $p = .01$ , and frequency of bodily symptoms,  $p = .09$ .

MANOVA on the contrast pre–post revealed a significant treatment effect,  $F(9, 55) = 18.9, p < .001$ . Post-hoc ANOVAs demonstrated significant changes on all variables except private SC ( $p = .1$ ). A significant condition effect was found,  $F(9, 55) = 3.1, p < .01$ , due to greater reductions after TCT–CT on public SC,  $p < .05$ , and SFA-arousal,  $p = .01$ .

The pre-follow-up I MANOVA revealed a significant treatment effect,  $F(9, 55) = 21.6, p < .001$ . On all dependent variables significant changes were observed. A significant condition effect occurred,  $F(9, 55) = 2.7, p < .05$ , caused by greater reductions after TCT–CT on public SC,  $p < .05$ , and SFA-arousal,  $p = .08$ .

At follow-up II 8 completers failed to do assessments: 5 (15%) from TCT–CT, 3 (9%) from AR–CT. Their results were estimated using regression models described earlier. A significant main treatment effect for the contrast pre-follow-up II occurred,  $F(9, 55) = 26.5, p < .001$ . TCT–CT was superior to AR–CT,  $F(9, 55) = 2.6, p < .05$ , caused by a greater reduction in BTS-Q,  $p < .05$ , and SFA-arousal,  $p < .01$ , public SC,  $p < .01$ , and private SC,  $p = .08$ . Post-hoc BTS-Q subscales analysis revealed a greater reduction in severity of fear of bodily symptoms,  $p < .05$ , and negative beliefs,  $p < .05$ , after TCT–CT.

All analyses were repeated excluding treatment dropouts, and, for long-term follow-up analyses, excluding patients who failed to complete assessments but whose results were estimated. Treatment effects were even higher, but similar results were found concerning treatment differences.

Since AR patients had borderline more often personality disorders and more prior treatment at pre-test than TCT patients (see patient characteristics), data were reanalysed adding personality disorders and prior treatment as a factor. No main effect for personality disorders (patients with and without personality disorders improved equally) and no interaction between personality disorders and treatment condition occurred. Similarly, no main or interaction effects for prior treatment appeared.

Eight patients (four per condition) received additional treatment after follow-up I. The number of additional treatment sessions was 11.5 (SD 6.6) after TCT–CT, and 25.3 (SD 22.4) after AR–CT, n.s. The additional treatments were CBT (5), medication (1), group therapy (1), counselling (1). After entering additional treatment as a covariate, TCT–CT stayed superior to AR–CT at follow-up II,  $F(9, 54) = 2.7, p < .05$ .

### Effect sizes

Effect sizes for intent-to-treat patients were computed according to Cohen's  $d (M_{pre} - M_{post}) / SD_{pooled}$ , where  $SD_{pooled} = \sqrt{[(SD_{pre}^2 + SD_{post}^2) / 2]}$ . Effect sizes were very large (up to 2.9) for the complaint-specific measures BTS-Q and CCMs. Table 4 shows that  $d$ s increased in time, and were higher for TCT–CT

Table 1  
 Characteristics of patients assigned to TCT-CT or AR-CT

	TCT-CT ( <i>n</i> = 33)	AR-CT ( <i>n</i> = 32)
Age	31.5 (9.3)	33.1 (11.5)
Educational level <sup>a</sup>	7.2 (2.1)	7.3 (2.5)
Level current profession <sup>b</sup>	3.5 (1.5)	3.8 (1.9)
Duration of social anxiety (in months)	127.5 (101.6)	147.6 (116.6)
Prior treatment for social anxiety ( <i>n</i> of patients)	7 (21%)	15 (47%)
Gender (number and % of women)	16 (48%)	17 (53%)
<i>Working situation</i>		
House wife	3 (7%)	2 (5%)
Student	8 (30%)	8 (32%)
Work	17 (37%)	12 (44%)
Ill	2 (6%)	6 (19%)
Unemployed	3 (9%)	3 (9%)
Retired	0 (0%)	1 (3%)
<i>Family situation</i>		
Married/ living together	21 (64%)	19 (59%)
Unmarried/living alone	9 (28%)	11 (35%)
Living with parents	3 (9%)	2 (6%)
<i>Pre-treatment medication for social phobia</i>		
No	26 (79%)	22(69%)
Tranquillizers	5 (15%)	7 (22%)
Anti-depressants	1 (3%)	1 (3%)
Other	1 (3%)	2 (6%)
<i>Type of bodily symptom</i>		
Blushing	9 (27.3%)	6 (19%)
Trembling	5 (15.2%)	8 (25%)
Sweating	0 (0%)	2 (6%)
Freezing	4 (12.1%)	3 (9%)
Blushing and trembling	4 (12.1%)	1 (3%)
Blushing and sweating	5 (15.2%)	3 (9%)
Trembling and sweating	2 (6.1%)	2 (6%)
Blushing, trembling and sweating	1 (3.0%)	5 (16%)
Combinations with freezing	3 (9.1%)	2 (6%)
Axis I co-morbid disorder(s) ( <i>n</i> and %)	19 (57%)	19 (59%)
Depressive and/or dysthymic disorder	12 (36.3%)	15 (47%)
Panic and/or agoraphobia	7 (21.2%)	4 (13%)
Obsessive-compulsive disorder	2 (6%)	4 (13%)
Generalised anxiety disorder	1 (3%)	2 (6%)
Simple phobia	1 (3%)	3 (9%)
Post-traumatic stress disorder	1 (3%)	1 (3%)
Body dysmorphic disorder	1 (3%)	1 (3%)
Eating disorders	2 (6%)	3 (9%)
Hypochondriasis	1 (3%)	1 (3%)
V-code (marriage, work)	2 (6%)	1 (3%)
Substance abuse	5 (15%)	4 (13%)
Axis II disorder(s) ( <i>n</i> and %) <sup>c</sup>	6 (22%)	13 (45%)

<sup>a</sup>From 1 = no education to 11 = university.

<sup>b</sup>From 1 = labour for which no education is needed to 6 = management or science.

<sup>c</sup>For 9 patients (6 TCT and 3 AR) no axis-II diagnosis was obtained.

than for AR-CT. Effect sizes for completers only were somewhat higher, for example, at follow-up II *d* of BTS-Q and CCMs respectively was for TCT-CT completers 3.0 and 3.2 and for AR-CT 1.6 and 2.2.

Table 2

Stability of all dependent variables: range, means, standard deviations between brackets, at waiting list and pre-test, paired *t*-test, and test–retest correlation, for patients (*n* = 34) who had to wait for treatment

	Range	Waiting list	Pre-test	<i>t</i> -value	<i>r</i>
Fear of bodily symptoms	0–150	108.2 (22.5)	105.5 (22.6)	1.0	.77
Social phobic symptoms	18–450	271.3 (65.8)	267.6 (65.2)	.5	.82
Other psychopathology	72–598	204.8 (73.8)	200.9 (81.2)	.6	.88
Social skills deficits	0–200	103.5 (26.5)	105.0 (26.0)	–.6	.84
<i>SFA</i>					
Arousal	0–24	11.4 (4.2)	11.6 (5.0)	–.3	.71
Performance	0–20	13.1 (5.9)	13.6 (5.8)	–.8	.74
<i>SCS</i>					
Public	0–28	19.7 (5.3)	18.8 (5.5)	1.1	.64
Private	0–40	23.3 (7.7)	22.2 (8.0)	1.0	.74

Note: All *r*'s are significant at  $p < .001$ , no *t*-test reached significance.

### High end-state functioning

Table 5 presents high end-state functioning separate for BTS-Q and SPAI, and for both variables combined. Cut-off points were 51 for BTS-Q (5% false positives, 13% false negatives) and 88.8 for SPAI (9% false positives, 11% false negatives) (Bögels & Reith, 1999). No differences occurred on BTS-Q end-state at within,  $\chi^2(1, N = 65) = .0$ , post,  $\chi^2 = 2.7$ , follow-up I,  $\chi^2 = .4$ , and follow-up II,  $\chi^2 = 1.9$ . Also, no differences appeared on SPAI end-state at within,  $\chi^2 = .5$ , post,  $\chi^2 = .1$ , follow-up I,  $\chi^2 = .8$ , and follow-up II,  $\chi^2 = .7$ . However, combining both criteria (being in the normal range on BTS-Q and SPAI), at follow-up II more patients were in the normal range after TCT–CT,  $\chi^2 = 3.8$ ,  $p = .05$ , but no differences across conditions were observed at within,  $\chi^2 = .1$ , post,  $\chi^2 = 1.4$ , or follow-up I,  $\chi^2 = .6$ .

### Blushers versus tremblers

Differential treatment effects were investigated for erytrophobics ( $N = 24$ ) versus tremophobics ( $N = 20$ ). Groups differed at pre-test on fear of blushing,  $F(1, 42) = 222.2$ ,  $p < .001$ ,  $M = 79.4(13.8)$  for erytrophobics,  $M = 15.9(13.5)$  for tremophobics, and on fear of trembling,  $F(1, 42) = 175.0$ ,  $p < .001$ ,  $M = 18.4(14.0)$  for blushers,  $M = 75.8(14.4)$  for tremblers. MANOVA with treatment and blushing versus trembling as factors yielded no main effect for type of complaint at any time contrast, indicating that erytrophobics and tremophobics responded equally well to treatment. Also, no interaction occurred between type of complaint and treatment condition at any time contrast. Finally, on end-state functioning no differences between erytrophobics and tremophobics appeared across conditions.

### Discussion

The present study investigated the effects of TCT versus AR, combined with CT, for SPs with fear of showing bodily symptoms. Results show that: (I) both treatment packages were highly effective; (II) TCT alone was more effective than AR alone; (III) CT following TCT versus AR overruled the superior effect of TCT at post-test and 3-months follow-up; (IV) the combination TCT–CT proved in the long-term superior to AR–CT (V) TCT demonstrated greater attention changes than AR; and (VI) more patients reached high end-state functioning at 1-year follow-up after TCT–CT.

Compared to other studies on treatment of social phobia (see Rodebaugh, Holoway, & Heimberg, 2004), results of the studied treatments are very good. But also compared to the few prior studies on fear of blushing, trembling or sweating (Bögels, 1994; Scholing & Emmelkamp, 1993), results stand out. Several explanations are offered for the favourable results. First, complaint-specific measures like the BTS-Q might possess higher

Table 3  
Means (standard deviations between brackets) for all dependent variables separate for TCT-CT (*n* = 33) and ARCT (*n* = 32) at five measurement points for all (that is intent-to-treat) patients

	Pre-test		Within		Post-test		Follow-Up I		Follow-Up II	
	TCT	AR	TCT	AR	TCT-CT	AR-CT	TCT-CT	AR-CT	TCT-CT	AR-CT
Fear of showing Bodily symptoms	112.0 (18.5)	105.3 (21.2)	85.2 (28.3)	88.8 (29.6)	64.9 (29.2)	58.5 (36.3)	61.0 (32.9)	58.1 (34.8)	49.5 (28.8)	60.2 (40.0)
Other social phobic symptoms	264.6 (64.3)	262.4 (68.7)	237.2 (71.5)	246.1 (62.6)	204.7 (69.8)	203.9 (75)	210.7 (79.6)	209.5 (70.6)	183.3 (70.1)	196.0 (81.7)
Other Psycho-pathology	209.2 (84.5)	209.2 (77.8)	197.4 (94.2)	194.6 (74)	172.0 (92.3)	173.1 (80.6)	179.4 (99.6)	172.0 (80)	158.4 (87.7)	168.9 (84.9)
Social skills deficits	109.3 (28.1)	101.9 (26.9)	98.8 (28.3)	92.2 (28.9)	89.1 (27.9)	82.7 (30.7)	89.4 (30.4)	82.8 (31.0)	84.9 (27.2)	78.9 (30.7)
<i>SCS</i>										
Private	22.3 (6.8)	22.0 (8.4)	22.7 (6.8)	22.2 (7.9)	21.2 (7.1)	20.9 (8.3)	19.7 (7.9)	20.2 (8.4)	17.7 (7.7)	20.9 (8.9)
Public	19.7 (4.1)	17.6 (5.3)	18.5 (5.6)	17.7 (5.9)	16.7 (4.9)	16.9 (5.3)	15.3 (6.8)	16.6 (5.7)	14.3 (6.5)	16.0 (6.3)
<i>SFA</i>										
Arousal	12.5 (4.3)	10.8 (4.5)	9.7 (3.6)	10.4 (4.7)	6.7 (4.4)	7.1 (4.5)	7.5 (4.5)	7.8 (4.8)	5.4 (4.3)	7.4 (5.0)
Performance	12.3 (6.3)	13.2 (5.3)	10.6 (5.4)	11.5 (5.4)	8.1 (5.7)	8.1 (5.6)	9.2 (5.7)	8.2 (5.8)	7.0 (4.6)	8.8 (6.4)
Central causal misinterpretations	85.0 (9.9)	80.5 (12.6)	58.8 (27.2)	66.3 (22.6)	36.8 (28.1)	37.7 (30.1)	39.6 (26.6)	35.6 (29.8)	31.2 (24.4)	33.8 (30.7)

Note: Between pre-test and within patients received 8 weeks of either TCT or AR, between within and post-test all patients received CT, follow-up I took place 3 months, and follow-up II 1 year after treatment.

Table 4  
Effect Sizes for Intent-to-treat Patients and Completers of all Dependent Variables separate for TCT ( $n = 33$ ) and AR ( $n = 32$ ), at four Time Contrasts

	Pre-test–within				Pre-test–post-test				Pre-test–follow-up I				Pre-test–Follow-up II			
	Intent to treat		Completers		Intent to treat		Completers		Intent to treat		Completers		Intent to treat		Completers	
	TCT	AR	TCT	AR	TCT-CT	AR-CT	TCT-CT	AR-CT	TCT-CT	AR-CT	TCT-CT	AR-CT	TCT-CT	AR-CT	TCT-CT	AR-CT
Fear of bodily symptoms	1.1	.6	1.2	.7	1.9	1.6	2.3	1.9	2.4	1.6	2.2	2.0	2.6	1.4	3.0	1.6
Social phobic symptoms	.4	.3	.4	.3	.9	.8	.9	.9	.7	.8	.8	.8	1.2	.9	1.3	1.0
Other psychopathology	.1	.2	.2	.2	.4	.5	.5	.5	.3	.5	.4	.5	.6	.5	.7	.6
Social skills	.4	.4	.4	.4	.7	.7	.8	.7	.7	.7	.7	.7	.9	.8	1.0	.9
SCS																
Private	-.1	-.0	.0	.0	.2	.1	.2	.2	.4	.2	.4	.3	.6	.1	.7	.2
Public	.2	-.0	.3	.0	.7	.1	.7	.2	.8	.2	.8	.2	1.0	.3	1.1	.3
SFA																
Arousal	.7	.1	.7	0	1.3	.8	1.3	.9	1.1	.6	1.1	.7	1.7	.7	1.7	.7
Performance	.3	.3	.3	.3	.7	.9	.7	1.2	.5	.9	.5	1.0	1.0	.8	1.0	.8
Central causal misinterpretation	1.3	.8	1.3	.8	2.3	1.9	2.8	2.0	2.3	2.0	2.6	2.2	2.9	2.0	3.3	2.2

Table 5

Numbers and percentages of intent-to-treat patients separate for TCT ( $n = 33$ ) and AR ( $n = 32$ ) who are below the cut-off point of fear of showing bodily symptoms (BTS-Q), general social phobia (SPAI), and below the cut-off point of both BTS-Q and SPAI, at four measurement points

	<i>Within</i>		<i>Post-test</i>		Follow-up I		Follow-up II	
	TCT	AR	TCT–CT	AR–CT	TCT–CT	AR–CT	TCT–CT	AR–CT
BTS-Q	5 15%	5 16%	9 27%	15 47%	13 39%	15 47%	20 61%	14 44%
SPAI	11 33%	8 28%	17 52%	15 47%	17 52%	12 38%	21 64%	14 44%
BTS-Q and SPAI	4 13%	3 9%	7 21%	11 34%	10 30%	7 22%	17 52%	9 28%

*Note:* At within patients had received 8 weeks of either TCT or AR, between within and post-test all patients received CT, follow-up I took place 3 months after treatment, follow-up II 1 year after treatment.

treatment sensitivity. Second, starting with a coping technique before CT seems particularly helpful, since these patients ask for strategies to reduce bodily symptoms, which TCT and AR offer (Scholing & Emmelkamp, 1993). Third, new applications within CT, like mirror and video-feedback and interrogating the environment (Clark, 1997) may have improved the effectiveness of CT.

Attention and cognitive models of social phobia (e.g. Bögels et al., 1997; Clark & Wells, 1995; Rapee & Heimber, 1997) predict that focussing attention outward reduces awareness of bodily symptoms, facilitates processing schema-incongruent information about bodily symptoms, and consequently reduces fear of bodily symptoms and negative beliefs. In line with this, TCT had indeed a superior effect on severity of fear and negative beliefs about bodily symptoms. Since attention measures clearly indicated that TCT is superior in reducing self-focused attention, it can be concluded that the superior effect of TCT resulted from changes in attention. Note that the superior cognitive effect of TCT cannot be explained by exposure since the amount of exposure in TCT versus AR was kept constant. However, it cannot be ruled out that the superiority of TCT may either be a function of the attendance to internal cues (“feeling tense? .. relax”) in AR, which may limit available process resources, or by TCT being more consistent with CT than AR.

The effects of CT seemed strong enough to compensate for the superior effect of TCT compared to AR in the short- and medium-term. This compensating effect cannot be explained by an attention-redirecting effect of CT, since no improvement was observed on SFA after CT, and further reduction of public SC was mainly observed after CT in patients who received TCT before (see Table 3). The finding that in the long run the combination TCT–CT was superior to AR–CT in reducing negative beliefs, requires an explanation. Patients by then might not actively apply cognitive techniques (like challenging negative thoughts) any longer, but the acquired skill of (re)focussing attention outside might still help them to process schema-incongruent information and not relapse into automatic dysfunctional thinking. This is in line with Wells’ (2000) idea that therapy should change the automatic processing system rather than the content of dysfunctional schemes. The assumption that TCT profoundly changed patients’ self-focussing habit is consistent with the observation (Tables 3 and 4) that patients after TCT–CT, but not after AR–CT, keep improving on attention measures. Post-hoc tests show that for the contrast 3-months to 1-year follow-up, TCT–CT was superior to AR–CT in further reducing private SC ( $p < .05$ ), SFA-arousal ( $p < .05$ ) and SFA-performance ( $p < .01$ ). Furthermore, post-hoc correlations of gain scores from 3-months to 1-year follow-up demonstrated that improvement on attention measures and negative beliefs substantially correlate, respectively  $r = .31$  for private SC,  $.41$  for public SC,  $.53$  for SFA-arousal, and  $.59$  for SFA-performance (all  $ps < .05$ ). Taken together, the combination of TCT–CT led to further improvement on attention after treatment had ended, which explained the superior effect of the combination TCT–CT on negative beliefs 1 year later.

This study had several limitations. First, as one of the treatments (TCT) was developed and evaluated by the same group, an independent replication is important. Second, since solely paper-and-pencil measures were applied, effects of the treatments on diagnosis, objective behaviour and physiological responses are unknown.

Third, treatment adherence was not formally measured. Fourth, missing values occurred that had to be estimated. Fifth, power requirements prohibited the study of the effects of TCT or AR as a stand-alone treatment. The same power requirements prohibited an additional condition of CT alone, leaving the question unanswered whether 16 sessions of CT alone would have an equivalent effect to TCT–CT. Sixth, results cannot be generalised to SPs without fear of showing bodily symptoms.

The finding that attention changes produced superior long-term changes in dysfunctional thinking suggests several directions for future research. The first challenge is to investigate whether attention training alone has more lasting effects on dysfunctional thinking than cognitive therapy. Second, to understand long-term effects of treatment it is important to investigate, for different treatment modalities, what patients still apply from what they learned and whether they apply it in a conscious or more automatic fashion. Finally, it should be noted that with the new generation of CT for social phobia, that incorporates aspects of attention training, similarly high effect sizes are reported (e.g. Clark et al., 2003; effect size at 1-year follow-up for completers 2.5). This form of CT may be as effective for social phobics with fear of bodily symptoms as the combination TCT–CT. However, because Clark's CT is quite long (19 sessions of 75 min.) and requires extensive therapist training, the next challenge is to develop shorter treatments needing less therapist training. Since TCT as a stand-alone treatment is short (8 sessions) and easy to apply, TCT holds that promise.

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