Can a one-weekend group therapy reduce fear of blushing?
Results of an open trial

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Fear of blushing is a specific syndrome generally subsumed under the diagnostic category of social anxiety disorder (SAD). This study aims at gathering preliminary data about an intensive weekend intervention specifically designed for individuals with fear of blushing as the predominant complaint. Treatment consisted of a combination of attention training and behavioral therapy. Thirty-one blushing-fearful individuals meeting the criteria for SAD following the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) were treated in three groups. The study was conducted as an open trial. Full assessments were performed before treatment, six weeks after treatment, and at six-month follow-up. Only fear of blushing, the main outcome criterion, was assessed immediately before and after the treatment weekend. The intensive therapy program was well accepted. Fear of blushing and SAD were significantly reduced and reductions remained stable. At follow-up, nearly two-thirds of the participants achieved significant changes in fear of blushing. Despite the preliminary nature of this study, the condensed format of weekend therapy for treating fear of blushing calls for further investigation.

Keywords: social anxiety disorder; social phobia; fear of blushing; erythrophobia; attention training; behavioral therapy

Social anxiety disorder (SAD) is one of the most common and debilitating anxiety disorders (for overviews see Fehm, Beesdo, Jacobi, & Fiedler, 2008; Ruscio et al., 2008), covering a wide range of heterogeneous symptom profiles (Hofmann, Heinrichs, & Moscovitch, 2004). The understanding of this disorder and its nature has increased substantially over the past several years (Stein & Stein, 2008). However, patients whose primary concerns center on bodily symptoms, such as blushing, trembling, sweating, or freezing, have been addressed only rarely in the literature so far (Connor, Davidson, Chung, Yang, & Clary, 2006). Prevalence data on SAD that solidly describe the proportions of SAD patients with and without the fear of bodily symptoms are lacking. Ginsburg, Riddle, and Davies (2006) report that of 128 children and adolescents with anxiety disorders, 51% suffered from blushing, 45% from sweating, and 43% from trembling or shaking. Of the 84 participants suffering from SAD, 55% reported blushing, 54% sweating, and 42% trembling or shaking. Bögels (2006) examined 156 adult patients with SAD, of which 49% reported a predominant complaint of bodily symptoms. Thus, although robust
estimates of prevalence in larger representative samples are currently lacking, somatic symptoms seem to play an important role in SAD.

Patients who primarily suffer from fear of blushing (erythrophobia) generally meet DSM-IV criteria for SAD. Physiological research shows that blushing-fearful individuals do not blush more intensely or more often than controls, but tend to overestimate the visibility and intensity of their blushing (Drummond, 1997; Drummond et al., 2003; Mulkens et al., 2001). However, Gerlach, Wilhelm, Gruber, and Roth (2001) report that social phobics with and without the primary complaint of blushing blushed more than healthy controls when watching a videotape of themselves. In a recent study, Drummond et al. (2007) showed that blushing dissipated more slowly in the blushing-fearful group compared to the control group, resulting in an incremental increase in facial blood flow during the whole experiment. So far, no final conclusions can be drawn either regarding differences between blushing-fearful individuals and controls or regarding the underlying mechanisms of blushing. In the individual development of a fear of blushing, negative learning experiences are of particular importance as the possible starting point of a vicious circle consisting of blushing, negative appraisal of blushing as dangerous, anxiety and fear of blushing, heightened self-focused attention to blushing, faster detection of actual blushing, more anxiety, and so on (Chaker & Hoyer, 2007; Mulkens & Bögels, 1999).

From a therapeutic viewpoint, the two preeminent cognitive–behavioral treatment models of SAD (Clark & Wells, 1995; Rapee & Heimberg, 1997) have shown good to excellent efficacy based on effect sizes (e.g., Butler, Chapman, Forman, & Beck, 2006; Clark et al., 2003, 2006; Fedoroff & Taylor, 2001; Hedges, Brown, Shwalb, Godfrey, & Larcher, 2007; Heimberg, 2002; Powers, Sigmarrson, & Emmelkamp, 2008), although sometimes response and remission rates are unsatisfactory (e.g., Davidson et al., 2004). In both models of SAD, the systematic manipulation of dysfunctional attention plays an important role, although the exact patterns of attentional direction in SAD are not fully understood. Rapee and Heimberg (1997) assume that attention is drawn to internal cues and external stimuli indicating negative evaluation, whereas Clark and Wells (1995) assume that the attention is mostly self-focused (for a review see Hofmann, 2007; Schultz & Heimberg, 2008).

During a blush, the warmth of the face is a strong physiological stimulus drawing the attention inwards. Bögels, Mulkens, and de Jong (1997) considered self-focused attention to be especially critical for fear of blushing and developed the task concentration training (TCT) as an intervention to manipulate the attentional focus. The goal of TCT is to reduce self-focused attention by explicitly redirecting attention outward to the task at hand. In the first phase of TCT, patients should gain insight into attention processes and the reinforcing effect of heightened self-focused attention on blushing by writing down blushing episodes in a diary. Three directions of attention are defined as (a) self-focused attention, meaning attention to arousal, bodily symptoms, thoughts, memories, or feelings; (b) attention to the environment including everything outside the person; and (c) attention to the task as a part of attention to the environment, defined as attending to everything that is important at the moment. For example, while talking with the neighbor, attention to the environment could mean watching the flowers in his garden. Attention to the task would mean concentrating on what he is saying, how he looks while he is talking, and what to say in reply. In the second phase of TCT, attention exercises are practiced in
non-threatening situations. The goal is to learn voluntary control over the focus of attention and to redirect it to a certain task. The patient should, e.g., constantly redirect his or her attention to a story through listening and reading exercises. As homework assignments, patients focus their attention in non-threatening situations such as watching TV, making a phone call, listening to the lyrics of a song, or walking through a forest. In the last phase, the attention should be directed and constantly redirected to the task at hand in social situations. As attention is highly linked to anxiety, this is practiced in hierarchical steps and the patient is encouraged to redirect his or her attention to the social situation after a distraction by blushing or self-related thinking (Bögels et al., 1997). TCT has shown good to excellent effect sizes as a stand-alone treatment and when used in combination with cognitive therapy (CT) or exposure therapy for people with SAD and a specific fear of a bodily symptom (Bögels, 2006; Bögels, Sijbers, & Voncken, 2006; Mulkens et al., 2001).

Scholing and Emmelkamp (1993) observed that patients with fear of blushing, sweating, or trembling were very ashamed of their fear of bodily symptoms. They suggested symptom-homogeneous groups to facilitate communication and relief with like-minded persons as possibly promising. Recently, two studies showed that group therapy for social phobia following the model of Clark and Wells (1995) was inferior to individualized treatment (Mörtberg, Clark, Sundin, & Aberg Wistedt, 2007; Stangier, Heidenreich, Peitz, Lauterbach, & Clark, 2003). In both studies, social phobia patients with different main complaints participated in the same groups. To the best of our knowledge, no group-therapy study with symptom-homogeneous SAD patients has been conducted to date.

Therefore, we conducted an open trial to test the feasibility, the acceptance, and the long-term effects of a symptom-homogeneous weekend group for the treatment of fear of blushing. We decided to use the format of an intensive weekend intervention to give persons who are short on time or have to travel a great distance to our treatment center the possibility of participation, thus guaranteeing a sufficient sample size. We used a combination of TCT and behavior therapy elements, because Mulkens et al. (2001) have shown that TCT produced cognitive changes faster than exposure therapy and because on the other hand, studies have shown that the reduction of safety behaviors significantly improves therapy outcome in SAD (Morgan & Raffle, 1999; Wells et al., 1995). Our intensive therapy program integrated TCT with behavior therapy elements following the model of Clark and Wells (1995). The therapy was delivered as a one-weekend group therapy for individuals diagnosed with SAD and with fear of blushing as their primary concern.

**Method**

**Participants and procedure**

$N = 27$ data sets were included in the completer analysis. The study was carried out using a one-group pre-test–post-test design. It served as a means of phase-II-testing of the intensive treatment intervention. A pre-test and two post-tests were conducted. The local ethics committee approved the procedure and all participants gave written informed consent.

Participants with a primary concern of fear of blushing were recruited through an article about erythrophobia in a German pharmacy magazine. Eighty-nine interested
persons called and 53 (60%) sent back the baseline questionnaire, which was mailed together with informative materials about fear of blushing and the therapy format. Exclusion criteria included acute and severe depression, psychosis, or substance dependence as well as being under the age of 18. The first 36 responders were interviewed via telephone to assess mental health status and comorbidity. The diagnostic interview data from the Composite International Diagnostic Interview (CIDI) revealed comorbid lifetime Axis I diagnoses including other anxiety disorders (53%), affective disorders (72%), somatoform disorders (19%), and substance use disorders (11%). According to the CIDI, severity ratings for SAD were mild for eight persons (22%), severe for 10 persons (28%), and very severe for 18 persons (50%). Four persons (11%) were categorized as suffering from non-generalized SAD, and 32 (89%) from generalized SAD. Fourteen participants (52%) reported one or more prior treatments for SAD/fear of blushing (n = 3), affective disorders (n = 4), substance abuse (n = 1), somatoform disorders (n = 2), or comorbid anxiety and/or mood disorders (n = 4). Of the seven participants who reported prior treatment for SAD alone or comorbid with another anxiety and/or mood disorder, four stated that the prior treatment was not helpful or effective.

Three groups of one-weekend sessions (March, April, and June 2006) were planned with a maximum of 12 participants each. Before treatment began, five people withdrew from participation due to acute illness (n = 1), pregnancy (n = 1), scheduling conflict (n = 1), and death in the family (n = 2). The final sample consisted of 31 participants: 74% (n = 23) were female; the mean age was 42.9 years (SD = 12.1); 45% (n = 14) had attended school for 12 years, 39% (n = 11) for 10 years, and 16% (n = 5) for eight years.

During treatment, three people (10%) dropped out because they did not believe that attention training would be helpful for their specific problems (n = 2), or because the group was perceived as too demanding (n = 1). One participant who completed treatment could not be reached for the post and follow-up assessments. Therefore, data sets of n = 27 study completers were included in the statistical analyses.

Measures and assessments
To assess mental health status and comorbidity based on DSM-IV diagnoses, we used the World Health Organization’s Composite International Diagnostic Interview (WHO-CIDI; German version DIA-X: Wittchen & Pfister, 1997), a fully standar-dized interview for Axis-I disorders. A specifically trained interviewer carried out all interviews via telephone.

Participants were asked to fill out a demographic questionnaire and a number of other self-report measures (see below). For the questionnaires, the authors developed the German versions following international standards on cross-cultural methodology (including translation, independent back-translation, and pre-tests with a student sample).

Blushing, Trembling, and Sweating Questionnaire (BTS-Q), Blushing version
To assess the various dimensions of the fear of showing bodily symptoms in SAD, Bögels and Reith (1999) developed the blushing, trembling, and sweating
questionnaire (BTS-Q). It consists of seven subscales, measuring fear of the symptom, positive and negative beliefs, behavioral problems, avoidance, physical symptoms, and frequency. For the blushing version, Cronbach’s $\alpha$ ranges between .77 and .98 (Bögels & Reith, 1999). In the present study, we used the BTS-Q blushing version. In contrast to the original version, we instructed participants to rate the six items of the fear of blushing subscale on a 0–10-point Likert scale instead of a visual analog scale. As the fear of blushing subscale validly distinguished controls, SAD participants with the fear of blushing, and SAD participants without the fear of blushing in previous research (Bögels & Reith, 1999), we used it as our main outcome criterion. Item examples are “How afraid are you to start blushing?” or “How often do you think in a certain situation: I hope I’m not going to blush?” The subscale measuring frequency of blushing during the last week is not reported because participants provided questionable answers (some did not report any events at all, whereas others reported 100 or more occasions). In our study, Cronbach’s $\alpha$ was .84 for the fear of blushing subscale, and ranged between .70 and .95 for the other subscales.

Social Phobia Diagnostic Questionnaire (SPDQ)
Newman, Kachin, Zuellig, Constantino, and Cashman-McGrath (2003) developed the social phobia diagnostic questionnaire (SPDQ) as a screening instrument for SAD. The questionnaire consists of a series of yes/no questions and rating scales for fear and avoidance. The SPDQ was modeled after the social phobia section of the Anxiety Disorders Interview Schedule IV (ADIS-IV; Brown, Di Nardo, & Barlow, 1994). Internal consistency (Cronbach’s $\alpha = .92$, Guttman split-half $r = .89$) and test-retest reliability were good ($\kappa = .63$). Convergent and discriminant validity were sufficient to good. However, Balon (2005) criticized the lack of validation data for clinical samples. In the present study, Cronbach’s $\alpha$ was .96.

Self-focused Attention Scale (SFA)
Bögels, Alberts, and de Jong (1996) developed the Self-focused Attention (SFA) Scale to measure self-focused attention. The SFA Scale includes two subscales measuring self-focused attention to one’s arousal and self-focused attention to one’s interpersonal behavior, and shows good homogeneity coefficients. The arousal subscale includes items such as “In the presence of other people, I’m constantly focusing on whether I behave tensely,” while an example for the behavior subscale is: “In the presence of other people I’m constantly focusing on whether I understand what others say.” In the present study, Cronbach’s $\alpha$ was .79 for the arousal subscale and .94 for the behavior subscale.

Evaluation questions
At post-measurement, the participants were asked to evaluate the treatment rationale and the working materials on a four-point Likert scale. Furthermore, they were asked to indicate how often they practiced the three phases of TCT on a four-point Likert scale ranging from zero (not at all) to three (very regularly).
Assessments

We conducted baseline assessments for all participants in February 2006. Three-weekend groups were conducted, one in March, one in April, and one in June 2006. Since the participants traveled from all over Germany for their weekend therapy, there were time constraints for assessment directly before and after the treatment. Furthermore, the weekend therapy and the homework done during the following six weeks (implementation phase) were considered to be efficacious. All patients were informed that the treatment included the implementation and everyday training phase. Only the main outcome criterion, the fear of blushing subscale, was assessed both immediately before and after the weekends. Full assessments were conducted at baseline, six weeks after each therapy weekend, and at six-month follow-up.

Treatment

The treatment was conducted by the first author and one co-therapist on the basis of a written German manual (available upon request). Both therapists were licensed psychotherapists and had a specific training as well as experience in the treatment of SAD. The first author introduced the co-therapist to TCT and to the manual in a three-hour course. The senior author supervised all therapy weekends but did not formally rate treatment adherence. Treatment consisted of 12 hours and 45 minutes net therapy time and took place on Friday from 2:00 pm to 7:00 pm and on Saturday from 9:00 am to 6:00 pm. The treatment procedure was as follows (see Table 1): after the formal greeting, introduction, and assessments, participants were informed that the treatment program specifically targeted fear of blushing. Participants were told that the integration of skills into everyday activities would not occur until after the therapy weekend during the implementation phase over the next six weeks, and then only by daily training. Psycho-education on anxiety, blushing, SAD, and erythro-phobia was provided. Participants were educated about the cognitive model of SAD (Clark & Wells, 1995) with a specific emphasis on the role of heightened self-focused attention. Attention training was introduced and carried out as described by Bögels et al. (1997). To practice in non-threatening situations, short stories were read out loud and participants were instructed to focus their attention on these stories. The first therapy day ended with a short recapitulation and question round. The second therapy day started on Saturday morning with a question round. The role of safety behaviors was explained and discussed. The discussion was intended to clarify that the use of safety behaviors leads to an inflexible and heightened attentional focus on blushing and other anxiety symptoms, and that safety behaviors must be reduced. The difference between avoiding through distraction (simply regulating attention toward the environment and away from blushing) and deliberately focusing on the task in a possibly embarrassing and blushing-enhancing situation was especially highlighted. In the next step, an individual fear and avoidance hierarchy was created. Each participant performed a roleplay in the group, with the emphasis on reducing safety behaviors and redirecting attention to the task. Participants were asked to rate themselves immediately after the roleplay on blushing, anxiety, tension, and safety behaviors, as well as the degree of competence and likeability they displayed. After all roleplays were completed, video feedback was provided. Participants were asked to watch themselves as objectively as possible, as though they were watching an actor...
on stage. They were asked to rate “the actor” on visibility of blushing, anxiety, tension, and safety behaviors, as well as competence and likeability. The ratings were compared and afterwards, the roleplay partners and other participants gave feedback. In the last therapy phase, participants were instructed to keep a homework diary for the implementation phase during the following six weeks. The homework for the first weeks was to practice focusing and re-directing attention in non-threatening situations, and then to start practicing in social situations following the individual fear and avoidance hierarchy. The emphasis in social situations was on focusing on the task and reducing safety behaviors. Participants were encouraged to exchange telephone numbers to provide mutual feedback and assistance. They received a therapy booklet containing instructions for all therapy components, exercise suggestions, and work sheets.

**Statistical analyses**

All statistical analyses were performed with the SPSS 14.0 software. Keeping the small number of dropouts and the open-label design of the study in mind, all analyses were conducted as completer analyses. Differences in baseline values were examined with MANOVAs. Repeated-measures ANOVAs with Group as the between-participants factor were conducted to test for effects of Time and Time × Group interaction effects. Univariate post-hoc tests were performed by means of pairwise comparisons. *P* values were Bonferroni-corrected.

### Table 1. Treatment protocol for the therapy weekend.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>Friday</td>
<td></td>
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<tr>
<td>14.00–15.00</td>
<td>Welcome/formal greeting, introduction, and assessments</td>
</tr>
<tr>
<td>15.00–15.45</td>
<td>Psycho-education on anxiety, blushing, SAD, and erythrophobia</td>
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<tr>
<td>15.45–16.00</td>
<td>Break</td>
</tr>
<tr>
<td>16.00–17.15</td>
<td>Cognitive model of SAD, self-focused attention, and introduction of TCT</td>
</tr>
<tr>
<td>17.15–17.30</td>
<td>Break</td>
</tr>
<tr>
<td>17.30–18.30</td>
<td>First attention exercises – reading and listening exercises</td>
</tr>
<tr>
<td>18.30–19.00</td>
<td>Recapitulation and attention exercises for the evening</td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
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<tr>
<td>09.00–09.30</td>
<td>Recapitulation and discussion of the attention exercises</td>
</tr>
<tr>
<td>09.30–10.30</td>
<td>Role of safety and avoidance behaviors</td>
</tr>
<tr>
<td>10.30–10.45</td>
<td>Break</td>
</tr>
<tr>
<td>10.45–13.00</td>
<td>Individual fear and avoidance hierarchy, and detailed planning of the role play</td>
</tr>
<tr>
<td>13.00–14.00</td>
<td>Lunch</td>
</tr>
<tr>
<td>14.00–15.30</td>
<td>Role play in the group, emphasis on role of attention</td>
</tr>
<tr>
<td>15.30–15.45</td>
<td>Break</td>
</tr>
<tr>
<td>15.45–17.15</td>
<td>Video feedback in the group and discussion about experiences</td>
</tr>
<tr>
<td>17.15–17.30</td>
<td>Break</td>
</tr>
<tr>
<td>17.30–18.30</td>
<td>Organization of the following six weeks with attention exercises, in vivo behavior experiments, and exchange of telephone numbers</td>
</tr>
<tr>
<td>18.30–19.00</td>
<td>Feedback about therapy weekend, assessments, and farewell</td>
</tr>
</tbody>
</table>

Note: Fifteen hours of time spent in treatment center, 12 hours and 45 minutes net therapy time excluding breaks.

On stage. They were asked to rate “the actor” on visibility of blushing, anxiety, tension, and safety behaviors, as well as competence and likeability. The ratings were compared and afterwards, the roleplay partners and other participants gave feedback. In the last therapy phase, participants were instructed to keep a homework diary for the implementation phase during the following six weeks. The homework for the first weeks was to practice focusing and re-directing attention in non-threatening situations, and then to start practicing in social situations following the individual fear and avoidance hierarchy. The emphasis in social situations was on focusing on the task and reducing safety behaviors. Participants were encouraged to exchange telephone numbers to provide mutual feedback and assistance. They received a therapy booklet containing instructions for all therapy components, exercise suggestions, and work sheets.
Results

Baseline data

The three treatment groups did not differ significantly on age, gender, education, severity of SAD, or comorbidity. However, they differed significantly in the time between baseline measurement and the start of therapy (7.5 weeks for the March group, 8.9 weeks for the April group, and 18.6 weeks for the June group; $F(2, 24) = 520.98, p < .001$). On the self-report measures at baseline, significant differences were found for the fear of blushing subscale of the BTS-Q, $F(2, 24) = 3.43, p = .049$, and for the arousal subscale of the SFA, $F(2, 24) = 4.04, p = .031$, indicating that further tests of Group × Time interactions were necessary. For all other variables, no significant differences between the groups were found.

Participants starting treatment during follow-up

At the six-month follow-up, four individuals (15%) had started psychotherapy, one person (4%) had started drug therapy, and one person (4%) had started both. A $t$-test revealed baseline differences on the SPDQ, $t(20.80) = 3.67; p = .001$, SFA arousal, $t(25) = 2.19, p = .039$; and SFA behavior, $t(23.21) = 4.05, p < .001$; showing that the six participants who started therapy afterwards were also more severe at baseline. At follow-up, differences were found for the SPDQ, $t(15.97) = 2.09, p = .023$; and SFA behavior, $t(15.57) = 2.52, p = .023$. Exclusion of these six data sets did not change the results for any ANOVA analyses, and effect sizes tended to increase after exclusion of these six data sets. To prevent the overestimation of time effects by excluding participants with less improvement, we decided to conduct all analyses using the entire sample size of $n = 27$ completers.

Main outcome criterion: fear of blushing

Table 2 presents the fear of blushing subscale of the BTS-Q, which was used as the main outcome criterion, at the five assessment points. A repeated-measures ANOVA with Group as the between-participants factor revealed a significant overall effect of Time, $F(4, 21) = 43.04, p < .001$, and a non-significant Group × Time interaction effect, $F(8, 44) = 1.72, p = .103$. Post-hoc tests revealed significant effects of Time between baseline and all other measurement points (all $p < .001$), as well as between immediately before the start of therapy and all measurement points (all $p < .001$).

Table 2. Means (M) and standard deviations (SD) for the main outcome criterion, the fear of blushing subscale of the BTS-Q at the five assessment moments ($n = 27$).

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Immediately before the therapy weekend</th>
<th>Immediately after the therapy weekend</th>
<th>Post-assessment after the implementation phase</th>
<th>Six-month follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>SD</td>
<td>$M$</td>
<td>SD</td>
<td>$M$</td>
</tr>
<tr>
<td>BTS-Q fear of blushing</td>
<td>7.56</td>
<td>1.75</td>
<td>6.59</td>
<td>1.76</td>
<td>4.90</td>
</tr>
</tbody>
</table>
Between immediately after the weekend and post-measurement, as well as follow-up, no significant changes occurred ($p = .171$ and $p = .831$, respectively). Post-hoc tests revealed no significant effects of Group (all $p > .05$). In repeated-measures ANOVAs the covariates age, gender, education, comorbidity, severity of SAD, and SAD status (generalized versus non-generalized) revealed no significant effects (all $p > .05$).

Analyses of the difference between fear of blushing at the start of therapy and fear of blushing at baseline revealed no significant differences between the groups, $F(2, 24) = .37, p = .699$. A Pearson’s correlation between length of waiting time and difference in fear of blushing was also non-significant ($r = .06; p = .755$), meaning that fear of blushing was not reduced simply by time.

**Other outcome variables**

All other variables were assessed at three measurement points: baseline, post (after the implementation phase) and at six-month follow-up. Table 3 shows means and standard deviations for these variables. Repeated-measures ANOVAs with Group as the between-participants factor were conducted. The results revealed significant overall effects of Time (see Table 3) and non-significant Group $\times$ Time interaction effects. Post-hoc tests revealed significant effects of Time for all variables between baseline and all measurement points (all $p < .004$). Between post-measurement and follow-up, no significant changes occurred (all $p > .05$). Post-hoc tests revealed no significant effects of Group (all $p > .05$), except for the avoidance subscale of the BTS-Q. For this subscale, a significant difference was found between the March group and the June group, with the June group exhibiting lower scores at post-measurement ($p = .044$). Again, repeated-measures ANOVAs with the covariates age, gender, education, comorbidity, severity of SAD, or SAD status (generalized versus non-generalized), showed no significant effects (all $p > .05$).

**Effect sizes**

Effect sizes were computed according to Cohen’s $d$ (Cohen, 1988). For fear of blushing, effect sizes amounted to $d = .55$ from baseline to immediately before the start of the weekend, $d = 1.41$ from baseline to immediately after the weekend, $d = 1.92$ from baseline to post-assessment, and $d = 1.76$ from baseline to follow-up assessment. Effect sizes for fear of blushing were medium for waiting time and very large for therapy effects, whereas between post and follow-up assessment a slight decline occurred. For blushing-related concerns, effect sizes were large to very large from baseline to post-measurement (Table 4). For social anxiety and self-focused attention, effect sizes turned out to be medium to large. Between post-measurement and follow-up, nearly no changes or slight but non-significant declines in improvement occurred.

**Clinically significant changes**

Clinically significant changes were only examined for the main outcome criterion, fear of blushing. We calculated the reliable change index following Jacobson and Truax (1991). As no test-retest reliability data for the BTS-Q were available, we used our own data from baseline to immediately before the start of therapy as retest data
Table 3. Means ($M$) and standard deviations (SD) for all measures, and results of the repeated measures ANOVA ($n = 27$).

<table>
<thead>
<tr>
<th></th>
<th>Descriptives</th>
<th>ANOVA</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Post-assessment</td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>SD</td>
</tr>
<tr>
<td>BTS-Q positive cognitions</td>
<td>26.60</td>
<td>20.22</td>
</tr>
<tr>
<td>BTS-Q negative cognitions</td>
<td>61.16</td>
<td>15.30</td>
</tr>
<tr>
<td>BTS-Q behavioral problems</td>
<td>2.33</td>
<td>.71</td>
</tr>
<tr>
<td>BTS-Q avoidance</td>
<td>1.60</td>
<td>.69</td>
</tr>
<tr>
<td>BTS-Q physiological reactions</td>
<td>2.59</td>
<td>.71</td>
</tr>
<tr>
<td>SPDQ</td>
<td>17.07</td>
<td>5.05</td>
</tr>
<tr>
<td>SFA arousal</td>
<td>2.10</td>
<td>.70</td>
</tr>
<tr>
<td>SFA performance</td>
<td>2.43</td>
<td>1.03</td>
</tr>
</tbody>
</table>

Note: Post-assessment took place six weeks after the therapy weekend including the implementation phase; follow-up assessment took place six months after the therapy weekend; BTS-Q, Blushing, trembling, and sweating questionnaire; SPDQ, Social phobia diagnostic questionnaire; SFA, Self-focused Attention Scale.
and calculated Pearson’s $r$ ($r = .87; p < .001$). Furthermore, we used our baseline data as pre-treatment values instead of using normative data from a population-based sample. From baseline to immediately before the start of therapy, four participants (15%) showed a RC-index larger than 1.96. From baseline to immediately after the therapy, 10 participants (37%) reached this level of change, from baseline to post-measurement 15 (56%), and from baseline to follow-up 17 (63%). First improvements were already observed during waiting time and a growing number of meaningful changes occurred between the end of therapy and the follow-up assessment.

**Subjective evaluation**

The subjective evaluation of the therapy weekends led to the following results: 15 persons (56%) described the therapy rationale as comprehensible, and 12 persons (44%) as very comprehensible. One participant (4%) rated the working materials as somewhat helpful, 15 (56%) as helpful, and 11 (41%) as very helpful. Three participants (11%) did not practice TCT regularly, 11 (41%) practiced a little, 10 (37%) a lot, and three (11%) very regularly. Four participants (15%) did not expose themselves to difficult social situations for the purpose of practicing, 14 (52%) exposed themselves sometimes, seven (26%) often, and two (7%) very regularly. Twelve participants (44%) directed their attention in difficult situations to the task at hand a little, 12 (44%) a lot, and three (11%) very much. To examine the effect of the implementation phase, participants were divided into two groups based on the item “I focused my attention to the task at hand in difficult situations,” with group one answering “a little,” and group two answering “a lot” or “very much.” A $t$-test comparison revealed significant effects for the SPDQ, $t(24) = 2.56, p = .017$; BTS-Q fear of blushing subscale, $t(14.6) = 2.61, p = .020$; BTS-Q behavioral problems subscale, $t(17) = 3.41, p = .003$; and subjective impairment, $t(17.10) = 2.11, p = .022$. For all other variables, no group differences were found.

| Table 4. Effect sizes (Cohen’s $d$) for all symptom measures after a one-weekend treatment for patients with fear of blushing ($n = 27$). |
|-----------------|----------------|----------------|
|                 | Baseline – post | Baseline – follow-up | Post-follow-up |
| BTS-Q positive cognitions | .67 | .69 | .03 |
| BTS-Q negative cognitions | 1.26 | .97 | .17 |
| BTS-Q behavioral problems | 1.76 | 1.33 | .16 |
| BTS-Q avoidance | 1.24 | .86 | .25 |
| BTS-Q physiological reactions | 1.14 | 1.24 | .05 |
| SPDQ | .74 | .96 | .12 |
| SFA arousal | .83 | .87 | .07 |
| SFA performance | .70 | .68 | .01 |

Note: Post-assessment took place six weeks after the therapy weekend including the implementation phase; follow-up assessment took place six months after the therapy weekend; BTS-Q, Blushing, trembling, and sweating questionnaire; SPDQ, Social phobia diagnostic questionnaire; SFA, Self-focused Attention Scale.
Discussion

In this open trial, an intensive group treatment consisting of TCT and behavior therapy was tested for individuals meeting criteria for SAD with fear of blushing as the predominant complaint. We aimed at testing feasibility, acceptance, and long-term effects of such a focused weekend group for symptom-homogeneous individuals.

Regarding feasibility, we can conclude that blushing-fearful individuals were highly interested in a therapy specifically designed for blushing. Furthermore, they were willing to participate in a group setting with other blushing-fearful individuals. From a therapeutic viewpoint and in terms of practicability, it was possible to achieve the combination of TCT and behavior therapy in just one weekend. Although this left little time for questions or discussions in the group, the setting was very well accepted. The evaluation showed that the program was well understood by the participants and that they tried to implement TCT and behavior therapy in their everyday lives. The dropout rate was moderate (10%). Regarding long-term effects, results showed that the treatment led to significant reductions in fear of blushing and other blushing-related constructs, in self-focused attention, and in SAD. These improvements remained stable at six-month follow-up. This open trial is the first to implement TCT apart from the working group that developed and first investigated TCT: for SAD patients with fear of blushing, trembling, sweating, or freezing as the main complaint, Bögels (2006) reports effect sizes of 1.2 after the TCT component only, 2.3 after TCT and CT, and up to 3.0 for follow-up for the fear of bodily symptoms subscale of the BTS-Q. SFA effect sizes ranged between .3 and 1.7. Mulkens et al. (2001) report effect sizes of 1.14 at post-measurement and up to 1.48 at follow-up for the fear of blushing subscale of the BTS-Q among participants with blushing phobia. SFA effect sizes ranged between .08 and 1.21. In the present study, the effect sizes for the fear of blushing subscale of the BTS-Q reached 1.92 at post-measurement and 1.76 at follow-up. The SFA effect sizes ranged between .68 and .87. Nearly two-thirds of the participants reached the level of clinically significant change in the main outcome criterion, fear of blushing. These data, derived independently from the originators of the TCT intervention, again demonstrate the potential efficacy of this treatment for fear of blushing. In conclusion, these preliminary data support the feasibility, the acceptance, and the stability of effects of our intensive treatment for SAD.

Nevertheless, a number of methodological limitations should be considered when interpreting the findings. First, the lack of a control group hinders the disentanglement of therapy effects from random or chance effects. This is of particular importance considering the significant changes in fear of blushing even before the start of the therapy. Although (a) the trial population seems similar to those of other studies in their scores on relevant pre-measurements (Bögels, 2006; Mulkens et al., 2001); and (b) length of waiting time before the start of therapy was not correlated with a reduction of fear of blushing, possible response and time effects cannot be adequately estimated without knowing the scores of a wait-list control group. One possible explanation for the fear reduction even before the start of the therapy is that the participants had already lost some of their anticipatory anxiety by anticipating the “exposure” in a group and yet deciding to participate, or that the contact with the study group for the diagnostic assessment eased their fear. Mulkens et al. (2001) and Scholing and
Emmelkamp (1993) also found improvements during waiting time, whereas Bögels (2006) did not observe such changes. It would be interesting to know if improvement before therapy is a consequence of expectation effects and if this is especially the case for participants with blushing phobia. Apart from that, the participants were a self-selected population responding to an article about fear of blushing and reasons for participation were not assessed. This could result in a particularly motivated or help-seeking sample. Secondly, the one-group pre-test–post-test design does not allow separation of the effects of the TCT from the components of the behavior therapy or from the group effects, self-help instructions, and the contact with other participants after the weekend. A component control analysis was beyond the aims of this study but should be carried out in future research by means of a randomized repeated-measure design. In addition, more detailed process evaluation should be included in order to understand which effects are due to group cohesion or other unspecific therapeutic influences, and which components of therapy work best in reducing fear of blushing and SAD. Finally, we only applied self-report measures to estimate changes. As all measured variables declined, the specificity of our treatment in reducing fear of blushing is unclear. The inclusion of physiological or behavioral tests, as used by Hofmann, Moscovitch, and Kim (2006) or Mulkens et al. (2001), or the use of in-depth interviews to examine what really has changed in the everyday life of the participants, could help to explain the differentiating effects of therapy and therefore would be desirable for future studies.

Despite these limitations, the results of this preliminary trial encourage the continued evaluation of this intensive therapy program, which is specifically designed for the needs of participants with a fear of blushing. Keeping in mind the data of Mörtberg et al. (2007) and Stangier et al. (2003), which found group therapy with mixed SAD groups to be inferior to individualized treatment, it would be interesting to know if symptom-homogeneous groups would perform better. A direct comparison between mixed SAD groups and symptom-homogeneous or main complaint-homogeneous SAD groups and individualized treatment would be of particular interest.

Furthermore, the proposed treatment format meets the need for more intensive and short-term psychotherapy interventions. A growing number of studies have been published that report initial results for intensive therapy formats (see, for example, the case studies by Deacon, 2008 and Lang & Hoyer, 2007 for panic disorder, a non-randomized study for obsessive–compulsive disorder by Storch et al., 2008, a randomized controlled trial for personality disorders by Abbass, Sheldon, Gyra, & Kalpin, 2008, or a randomized controlled trial for depression by Schramm et al., 2007). The time-efficient nature of such an intensive treatment could hold great appeal and practicality for working professionals who are short on time, those who prefer a less “therapy-like” experience, or individuals with geographic restrictions to receiving ongoing treatment. Compared to a standard outpatient treatment, therapy weekends emphasize more the character of self-help and time-limited psychotherapy. Analyses of short and long-term outcome and cost–benefit calculations for time-intensive therapies seem to be a necessary step considering that these therapies could lead to massive cost reductions in health care systems all over the world.

Implementing therapy weekends seems promising for SAD, especially for individuals who do not regard themselves as mentally ill or disordered. Such an experience can help to familiarize patients with psychotherapy and motivate them to
continue working on SAD-related problems. In this study, nearly half of the participants had never undergone treatment before, and six individuals started therapy after the experience of the therapy weekend. This is especially important keeping in mind that all participants met the criteria for SAD. Therapy weekends can also be regarded as the first step in a “stepped-care” design for treating anxiety disorders (for an example of stepped care, see Sullivan et al., 2007). From a different point of view, this format of treating fear of blushing can serve as a means to disseminate specifically indicated treatment for SAD into practice even for those individuals who would not believe that SAD – as opposed to the fear of blushing – describes their main problem.

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