Internet-based Affect-focused Psychodynamic Therapy for Social Anxiety Disorder: A Randomized Controlled Trial With 2-Year Follow-Up

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Social anxiety disorder (SAD) is associated with considerable individual suffering and societal costs. Although there is ample evidence for the efficacy of cognitive behavior therapy, recent studies suggest psychodynamic therapy may also be effective in treating SAD. Furthermore, Internet-based psychodynamic therapy (IPDT) has shown promising results for addressing mixed depression and anxiety disorders. However, no study has yet investigated the effects of IPDT specifically for SAD. This paper describes a randomized controlled trial testing the efficacy of a 10-week, affect-focused IPDT protocol for SAD, compared with a wait-list control group. Long-term effects were also estimated by collecting follow-up data, 6, 12, and 24 months after the end of therapy. A total of 72 individuals meeting diagnostic criteria for *DSM–IV* social anxiety disorder were included. The primary outcome was the self-report version of Liebowitz Social Anxiety Scale. Mixed model analyses using the full intention-to-treat sample revealed a significant interaction effect of group and time, suggesting a larger effect in the treatment group than in the wait-list control. A between-group effect size Cohen's $d = 1.05$ (95% [CI]: [0.62, 1.53]) was observed at termination. Treatment gains were maintained at the 2-year follow-up, as symptom levels in the treated group continued to decrease significantly. The findings suggest that Internet-based affect-focused psychodynamic therapy is a promising treatment for social anxiety disorder.

Keywords: psychodynamic psychotherapy, social anxiety disorder, Internet-based psychotherapy, guided self-help, randomized controlled trial

Social anxiety disorder (SAD) is characterized by a fear of being negatively judged and evaluated by other people and a subsequent avoidance of social situations that might trigger anxiety (American Psychiatric Association, 2000). The disorder, with a life-time prevalence of about 12%, is associated with a substantial loss of quality of life (Kessler et al., 2005). Several evidence-based treatment options exist for SAD, including pharmacotherapy and psychotherapy (Cuijpers et al., 2013). Currently, cognitive behavior

therapy (CBT) has the strongest research support, but evidence for the efficacy of psychodynamic therapy (PDT) in the treatment of SAD has also emerged in recent years (Leichsenring, Leweke, Klein, & Steinert, 2015). For example, in a large multicenter trial (powered to detect clinically meaningful differences between conditions), Leichsenring et al. (2013) found that PDT for SAD was effective when compared with a wait-list control condition. When compared with CBT in the same trial, there were some differences favoring CBT over PDT at termination. However, no differences could be found in the long term because the effects of PDT increased over time (Leichsenring et al., 2014). Hence, the large study by Leichsenring et al. indicates equivalence of effects between PDT and CBT in the long term. In another recent trial, no differences could be observed between PDT and CBT, neither at termination nor at follow-up (Bögels, Wijts, Oort, & Sallaerts, 2014).

Providing access to high-quality psychotherapy for psychiatric conditions is a major societal challenge. In the case of CBT, there has been a fair amount of progress toward addressing this issue by developing variants of well-established CBT protocols in the form of guided self-help that can be provided through the Internet (Andersson & Titov, 2014). Typically, Internet-based CBT (ICBT) also involves some contact with an identified therapist who guides the treatment and provides feedback and answers questions, commonly in a format similar to e-mail (Andersson, 2016). Recent meta-analyses suggest ICBT is efficacious across a range of psychiatric conditions (Hedman, Ljótsson, & Lindefors, 2012), and the effects seem largely comparable with that of face-to-face CBT (Andersson, Cuijpers, Carlbring, Riper, & Hedman, 2014).

Recent research has shown that it is also possible to adapt PDT to the format of Internet-based guided self-help treatments. Several randomized controlled trials have been conducted, and these suggest that Internet-based PDT (IPDT) outperforms wait-list or online support for depression (Johansson et al., 2012), generalized anxiety disorder (Andersson et al., 2012), and mixed depression and anxiety (Johansson, Björklund, et al., 2013), with maintained effects at follow-up. However, to the best of our knowledge, no study has yet evaluated the efficacy of IPDT for the treatment of SAD.

Therefore, we sought to test the efficacy of IPDT for patients with SAD in the present study. The specific IPDT protocol used was derived from a subgroup of short-term PDTs known as experiential dynamic therapy (EDT; Lilliengren, Johansson, Lindqvist, Mechler, & Andersson, 2016), and is based on the idea that psychodynamic conflicts may be conceptualized as "affect phobias" (Frederick, 2009; Julien & O'Connor, 2017; McCullough, 1999; McCullough et al., 2003). This conceptualization builds upon the so called "triangle of conflict" and "triangle of persons" schemas (Malan, 1995; Figure 1). The triangle of conflict depicts the dynamic interplay between underlying adaptive affects (the bottom Feeling pole of the triangle), the inhibitory affects they may evoke (Anxiety pole) and the defensive behavior used to avoid, prevent, or diminish the tension between conflicting affective states (Defense pole). The triangle of persons refers to how such phobic avoidance patterns are typically developed in earlier relationships (Past persons pole), how these are evoked and maintained in current relationships (Current persons pole), and how these may be enacted with a therapist (Therapist pole), particularly in the case of face-to-face psychotherapy.

Such internal affect phobias may underlie and give rise to a number of clinical presentations including anxiety disorders (McCullough & Osborn, 2004). For example, from this perspective, SAD may then be understood as a consequence of learned secondary anxiety and/or shame reactions triggered by underlying emotions arising in relationships (McCullough et al., 2003). The basic strategies in the IPDT protocol includes helping patients conceptualize their problems in terms of internal affect phobias, identify underlying adaptive affects, become aware of defensive behaviors, and work toward resolution of the internal conflicts in current interpersonal contexts. Because shame is a central feature of SAD, the protocol for this particular study also included work on self-compassion.

Based on the results from a previous study using the same affect-focused IPDT protocol in a sample with mixed anxiety and depression (Johansson, Björklund, et al., 2013), we hypothesized that IPDT would be effective in reducing symptoms of social anxiety compared with a wait-list control condition. In line with previous IPDT studies showing maintained effects at follow-up, we expected that treatment gains in the present trial would be maintained over a 24-month follow-up period.

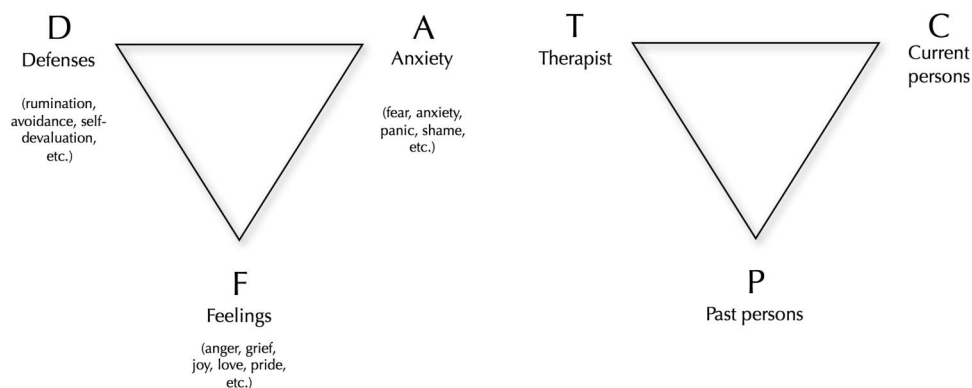*Figure 1.* Malan's two triangles – the triangle of conflict and the triangle of person. The two triangles (Malan, 1995) represent what David Malan called "the universal principle of psychodynamic psychotherapy". That is, defenses (D) and anxieties (A) can block the expression of true feelings (F). These patterns began with past persons (P), are maintained with current persons (C), and are often enacted with the therapist (T).

Method

Sample and Recruitment

Design. This was a randomized controlled trial comparing Internet-based affect-focused PDT with a wait-list control condition. Participants with social anxiety disorder were recruited nationally in Sweden through advertisements in various media (e.g., newspapers and social media) during late 2013 and early 2014. The study was approved by the regional ethics review board in Linköping in May, 2013 (Reg. no. 2013/361–31) and is registered on clinicaltrials.gov (NCT02105259).

Inclusion criteria. To be eligible for inclusion, participants had to meet the following criteria: (a) fulfilling the *DSM–IV* criteria for SAD as assessed using the Mini-International Neuropsychiatric Interview (Sheehan et al., 1998), (b) being 18 years or older, (c) with SAD as the primary diagnosis, (d) having a Liebowitz Social Anxiety Scale self-rated (LSAS-SR; Baker, Heinrichs, Kim, & Hofmann, 2002) score of at least 30, (e) absence of suicidality, (f) no concurrent psychological treatment for social anxiety disorder, (g) no change in medication during the last 3 months, (h) no other major psychiatric conditions where treatment provided by psychiatric outpatient care would be more appropriate (e.g., psychosis), (i) no current addictive disorder, (j) access to a computer with Internet connection, and (k) ability to read and write

in Swedish. Importantly, comorbidity with Axis I disorders was not an exclusion criterion. Table 1 reports characteristics including comorbidity for the final sample.

Inclusion procedure and randomization. Applicants to the study were instructed to complete an online screening containing demographic questions and the outcome measures described below. Participants were contacted for a telephone-based diagnostic MINI interview if he or she had completed the screening and met the initial inclusion criteria. A total of four final-semester MSc clinical psychology students, trained in the diagnostic procedures, conducted the interviews. A psychiatrist was available for consultation during the assessment phase. Before final inclusion of a participant, the senior researcher reviewed the screening results and the interview protocol, together with the interviewer. After inclusion, participants were randomized either to treatment or wait-list. The randomization was conducted by an independent researcher who used a true random number service (www.random.org) to allocate participants, thus ensuring concealment of allocation. Figure 2 shows the flowchart of the study.

Treatment

As described in the Introduction, the treatment was provided as a guided self-help protocol through the Internet. The self-help material consisted of nine modules that were individually sent by

Table 1
Demographic Description of the Participants

| Baseline characteristic	Treatment group	Control group	Total
Gender			
Male	18 (50.0%)	10 (27.8%)	28 (38.9%)
Female	18 (50.0%)	26 (72.2%)	44 (61.1%)
Age			
Mean (*SD*)	42.9 (13.3)	42.9 (13.6)	42.9 (13.3)
Min-Max	23–67	20–72	20–72
Marital status			
Married or co-habiting	21 (58.3%)	21 (58.3%)	42 (58.3%)
Other	15 (41.7%)	15 (41.7%)	30 (41.7%)
Educational level			
College or university, at least 3 years	18 (50.0%)	19 (52.8%)	37 (51.4%)
Other	18 (50.0%)	17 (47.2%)	35 (48.6%)
Employment status			
Employed	24 (66.7%)	26 (72.2%)	50 (69.4%)
Student	4 (11.1%)	5 (13.9%)	9 (12.5%)
Other	8 (22.2%)	5 (13.9%)	13 (18.1%)
Psychological treatment			
No experience	9 (25.0%)	11 (30.6%)	20 (27.8%)
Prior experience	25 (69.4%)	23 (63.9%)	48 (66.7%)
Ongoing	2 (5.6%)	2 (5.6%)	4 (5.6%)
Pharmacological treatment			
No experience	19 (52.8%)	17 (47.2%)	36 (50.0%)
Prior experience	10 (27.8%)	10 (27.8%)	20 (27.8%)
Ongoing	7 (19.4%)	9 (25.0%)	16 (22.2%)
Social anxiety disorder			
Generalized	27 (75.0%)	30 (83.3%)	57 (79.2%)
Non-generalized	9 (25.0%)	6 (16.7%)	15 (20.8%)
Comorbidity			
Depression	10 (27.8%)	11 (30.6%)	21 (29.2%)
Agoraphobia	10 (27.8%)	8 (22.2%)	18 (25.0%)
Generalized anxiety disorder	9 (25.0%)	6 (16.7%)	15 (20.8%)
Other	7 (19.4%)	7 (19.4%)	14 (19.4%)
Any	19 (52.7%)	17 (47.2%)	36 (50.0%)
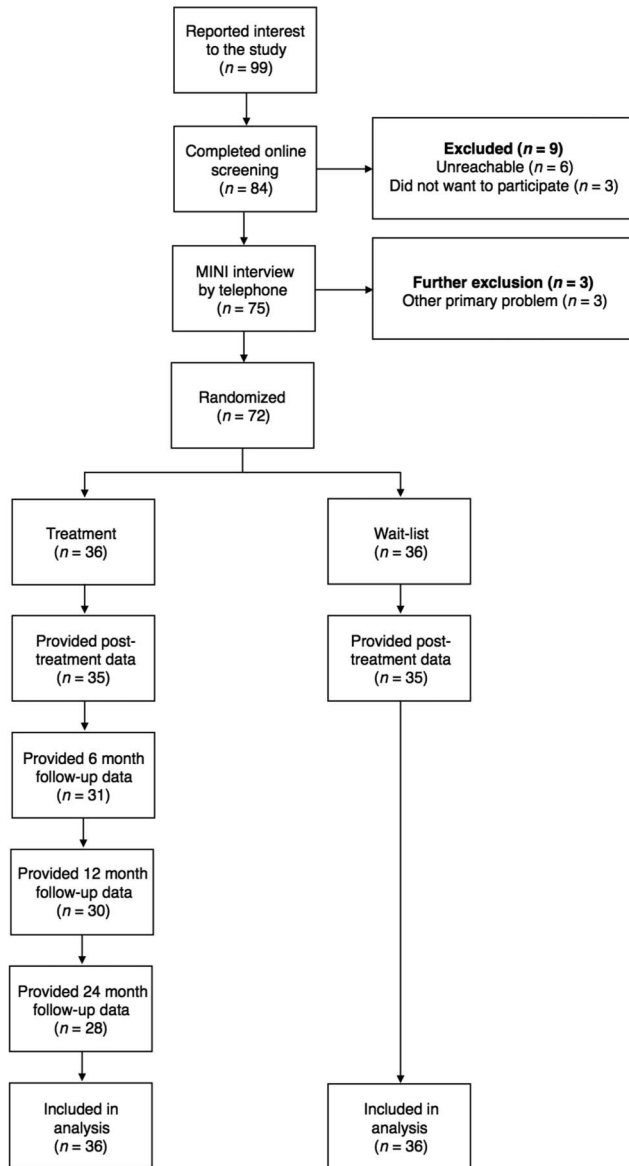
Figure 2. Participant flow throughout the trial.

the corresponding therapist to each participant weekly, followed by a last week of treatment spent reviewing the materials. Hence, the treatment lasted for 10 weeks. The therapists kept in contact with the participants through text messages, delivered through a highly secure online application. This web application was also used for delivery of treatment modules. Therapist time was not logged, but the therapists were instructed to spend around 10-15 min per participant and week.

The book *Living Like You Mean It* by Ronald J. Frederick was the principal source for the self-help material (Frederick, 2009). Frederick's book was translated to Swedish and adapted for the Internet format in a previous study (Johansson, Björklund, et al., 2013). The main addition to the material in the book was the addition of homework activities and the structuring of the exercises already contained in the book (Johansson, Frederick, &

Andersson, 2013). For this study, the material was extended with a new module on self-compassion and working with shame. This module was written by members of our research team, and it integrated the model of compassion used in the original affect phobia treatment manual (McCullough et al., 2003) with contemporary approaches to compassion (Gilbert, 2009; Werner et al., 2012). Other parts of the text were adjusted to be specific for SAD where appropriate.

The treatment was framed under the overarching concept of "emotional mindfulness" (Frederick, 2009). This approach involved teaching participants to mindfully pay attention to emotional experience through a series of different insight-oriented and skill-building exercises. The material guided the client through understanding the relationships between feelings, anxiety, and defenses (i.e., the triangle of conflict), as well as the developmental theory of affect phobias (i.e., the triangle of persons). Throughout the treatment, participants were taught to mindfully approach their feelings, notice and relinquish their defenses, and regulate their anxiety. The themes of the nine modules were as follows: (a) Introduction to the affect phobia model, (b) Understanding the causes of affect phobias, (c) Reducing shame and increasing self-compassion, (d) Identification and acceptance of feelings through practicing emotional mindfulness, (e) Recognizing and restructuring defenses, (f) Anxiety regulation, (g) Deepening of emotional experience, (h) Affect expression and restructuring image of self, and (i) Treatment summary, evaluation of progress, and advice for the future. In total, the self-help material consisted of 274 pages.

Example of treatment content and therapist interaction. As described above, the treatment mainly consisted of text and homework activities. For example, this text was presented in the Introduction module: "Let's begin by first doing a bit of consciousness raising about our general relationship with our feelings. . . . Even though you may not be aware of being uncomfortable with emotion or what's going on behind the scenes, with a little thought you can uncover the signs of feelings phobia. Take a moment now to stop and consider how you react to your feelings. These lists of the common signs of feelings phobia are not meant to be exhaustive, but they should help you begin to get a good idea of just how comfortable you are with your emotions" (Frederick, 2009, p. 8). This was followed by a list of typical expressions of affect-avoiding patterns, grouped under the following headlines: "Afraid of Feelings in General" (e.g., "Smiling or laughing when you're actually feeling something else, such as sadness, anger, or fear"), "Afraid of Being Emotionally Close or Intimate with Others" (e.g., "Feeling embarrassed or ashamed for feeling a particular way"), "Uncomfortable with and Avoiding Sadness or Grief" (e.g., "Feeling afraid of being or seeming vulnerable, not wanting to appear weak, acting as if you're unaffected"), "Afraid of Anger or Assertiveness" (e.g., "Feeling obligated to be nice or good, but feeling resentful inside and then accusing yourself of being a bad person"), and "Afraid of Happiness or Pleasure" (e.g., "Dismissing your accomplishments or putting off the good feelings to a later time"). At the end of the Introduction, there was a homework task to make sure that participants read through the list described above and sent comments to their respective therapist.

In the sixth, seventh and eighth module, various "tools" were introduced. This illustrates the focus on practicing techniques during the latter part of the treatment. For example, the sixth module "Taming the fear" introduced tools for anxiety regulation.

This included example techniques for affect labeling and mindful tracking of body sensations. The seventh module "Feeling it through" contained techniques for deepening of affective experience, for example, acceptance ("If you find yourself feeling conflicted about your feelings, remind yourself that emotions are neither right nor wrong; they just are. Then take a look and see what's there") and slowing down ("Whenever your attention wanders or you jump ahead, reorient yourself to your present emotional experience and sit with it"). Finally, the eighth module contained practice of affect expression and mindful communication.

Although it was possible for participants to contact their therapists any time during the week, it was typical that the main part of the text-based interaction took part at the end of the week, when participants sent in homework. Messages from the therapists included, for example, praise (e.g., "Good work!"), summaries of the patient's work (e.g., "With interest I read that over the past week you worked with the exercise 'Awareness of defenses'. You realized that intellectualization was one of your major defenses, and now you're concerned that this has kept you at a distance from other people"), and further inquiry (e.g., "What do you think you could learn from this realization?"). If a participant was behind schedule, messages from the therapist would include, for example, encouragement and problem-solving.

Further details on the treatment content can be found in the original source of the treatment protocol (Frederick, 2009). A detailed description of the work of the therapist in psychodynamic guided self-help psychotherapy can be found in Johansson, Frederick, et al. (2013).

Adherence to treatment. In line with previous work on guided self-help psychotherapy, we use the term adherence to describe the extent to which participants were exposed to the content of the intervention (Christensen, Griffiths, & Farrer, 2009; van Ballegooijen et al., 2014). More specifically for the treatment investigated in this study, we equate adherence with the number of treatment modules completed. A module was considered as completed if a participant had sent a written response to the therapist, reporting the homework assignment for that particular module.

Therapist support and supervision. The therapists were four Master's level students in their final year of a 5-year clinical psychologist program. Through training and internships, they had acquired clinical experience providing supervised psychological treatment. In other words, they were fully trained in providing psychological treatment. Prior to treatment, therapists were briefly trained in the IPDT model by a psychologist with expertise in Internet-based psychotherapy. Specific details on the role of the therapist in IPDT can be found elsewhere (Johansson, Frederick, et al., 2013). Model-specific supervision was provided in a videoconference format on two occasions by the author of the self-help material. Further supervision was also provided in Swedish by a therapist experienced in affect-focused psychotherapy. Treatment integrity was monitored during both forms of supervision. Typically, this was conducted by the therapists, describing the work of their respective clients to the supervisors. The supervisors could then help the therapists to correct participants' misunderstandings of the treatment material and suggest means for providing additional explanations. Supervision could also contain elements of teaching of the treatment model in cases where necessary. Furthermore, in case of participants having low adherence to the treatment protocol (i.e., a participant did not complete treatment modules according to the plan), potential solutions were discussed in supervision. Further details of the supervision process in Internet-based psychodynamic psychotherapy can be found in Johansson, Frederick, and Andersson (2016).

Wait-List Control

The wait-list control condition was inactive in the sense that the participants did not take part in any interventions during this phase. However, participants were expected to complete the weekly assessments and were reminded through the online treatment platform to do so. After the posttreatment assessment, wait-list participants were crossed over to a preference trial in which they could choose between the PDT or an ICBT treatment. The results from that treatment period are not presented in this study.

Data Collection

Participants completed all assessments online. The primary outcome measure was completed at the initial screening and immediately after treatment, as well as weekly during treatment. Additional secondary measures were completed before and after treatment. Follow-up assessments were completed 6, 12, and 24 months after termination (treatment group only).

Outcome measures. The LSAS-SR (Baker et al., 2002) was used as the primary outcome measure. Research has shown that the psychometric properties of the LSAS-SR are preserved when administered online (Hedman et al., 2010). A total of two secondary outcome measures were also administered. To measure the effect of treatment on symptoms of depression and general anxiety, the nine-item Patient Health Questionnaire Depression Scale (PHQ-9; Kroenke, Spitzer, & Williams, 2001) and the seven-item Generalized Anxiety Disorder Scale (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006) were used.

Response and remission. The rates of response and remission were defined using the LSAS-SR. In line with definitions in recent psychotherapy treatment trials (Leichsenring et al., 2013, 2014), we defined response as having a reduction on the LSAS-SR of at least 31% and remission to be an LSAS-SR score of 30 or lower.

Clinical global improvement. Telephone interviews were carried out at termination to get an estimate of global improvement, as measured by the 7-point version of the Clinical Global Impression—Improvement scale (CGI-I; Guy, 1976). Responses were rated on a 7-point scale ranging from 3 (*very much improved*) to negative 3 (*very much worse*), with zero meaning no change. In line with previous trials on social anxiety disorder, a participant rated as "Very much improved" or "Much improved" was classified as clinically improved, whereas those rated less were not (Stangier, Schramm, Heidenreich, Berger, & Clark, 2011). The interviews were carried out by final-year clinical psychology students, blind to treatment allocation.

Statistical Analyses

All analyses were conducted in the R(3.2) statistical environment. Data analyses were conducted according to the intention-to-treat principle, that is, the models utilized made use of all available data. For all analyses of continuous outcomes over time, mixed-

effects models for repeated-measures data, fitted with restricted maximum likelihood estimation, were used (Verbeke & Molenberghs, 2000). A mixed model analysis takes into account all available data from all randomized participants, making it a full intention-to-treat analysis, provides unbiased estimates in the presence of missing data under a fairly unrestrictive missing assumption (i.e., missing at random; MAR), and adequately handles nested data structures inherent in repeated-measures data (Gueorguieva & Krystal, 2004; Mallinckrodt, Clark, & David, 2001). Importantly, the MAR assumption allows the probability of data being missing to depend on observed variables, for example, symptom level as measured by the LSAS-SR (Little & Rubin, 2002). Hence, we assumed that the MAR assumption held.

We used mixed-effects models to evaluate potential moderators of treatment effects. Moderators are baseline variables that differentially predict outcomes of the groups, and these were evaluated by the interaction of Group × Potential Moderator × Time. We selected age, gender, and education as potential moderators. For all mixed-effects model analyses, the nlme R package was used (Pinheiro, Bates, DebRoy, & Sarkar; The R Development Core Team, 2011).

In the analyses of immediate treatment outcome compared with the control, we included fixed linear effects of time, group, and interaction of group and time. Subject-specific random effects (i.e., random intercept and slope) were retained whenever they significantly contributed to the model. The treatment was considered to be superior to wait-list if there was a significant Group × Time interaction effect on the investigated outcome, that is, treatment participants showed larger pretreatment to posttreatment change (slope) on the outcome than the wait-list participants. Within-group effect sizes were calculated as the slope divided by the baseline standard deviation (Feingold, 2009). For between-group effect sizes, this was the difference in slopes between groups divided by the baseline standard deviation. Confidence intervals for the effect sizes were obtained using bootstrap resampling with 5000 iterations. Differences at posttreatment on categorical variables were investigated with χ^2-tests.

To investigate long-term effects for the treatment group, piecewise mixed-effect models were specified to model change during distinct time periods of the trial within the same analysis (Raudenbush & Bryk, 2002). The models were once again estimated by means of restricted maximum likelihood using the nlme package (Pinheiro et al., 2011). For each measure, a two-piece growth model was estimated. Separate time coefficients (i.e., slopes) were provided for the active treatment phase (pre- and posttreatment; Piece 1) and the follow-up phase (post, 6-month, 1-year, and 2-year follow-up; Piece 2). Subject-specific random coefficients (i.e., random intercept and slope) and their covariance were retained whenever they significantly contributed to the model (Verbeke & Molenberghs, 2000). The regression model included fixed effects of time Piece 1, time Piece 2, and random effect of time Piece 1. Linear averaged population change (main effect of time) was assessed in each phase while holding effects constant from the other phase.

Response and remission status were calculated as categorical data, using the LSAS-SR in line with previous SAD studies (as described above). To be able to make use of all available data, we used a multiple imputation approach rather than linear mixed-effect models. This was owing to the fact that we needed to be able

to calculate the raw LSAS-SR values for the response/remission status and not only an estimated time slope (as with linear mixed models). As described in the above text, we assumed that data were missing at random. The (Multivariate Imputation by Chained Equations) package (Buuren & Groothuis-Oudshoorn, 2011) was used to generate 100 data sets of missing data imputations, and responder/remission status was calculated for each imputed dataset and then combined into one estimate. In that procedure, we used all available demographics, data from the outcome measures, and also data on number of completed treatment modules.

Power.   A post hoc power analysis of the posttreatment data on the LSAS-SR between the treatment and the control revealed that, assuming an alpha-level of .05, and based on the sample size obtained, a between-group effect size of $d = 0.60$ could have been detected with a power of 80%.

Results

In total, we included and randomized 72 participants, 36 to each group (see Table 1). There was a tendency for the male/female proportion of gender to be unbalanced in the treatment group versus the wait-list (50.0%/50.0% vs. 27.8%/72.2%). This was, however, not significant, $\chi^2(N = 72, df = 1) = 2.83, p = .093$. For other demographic variables, no indications of group differences were found (all χ^2's < 0.76, all p's > .38). Similarly, there were no baseline differences between groups on any of the outcome measures (all t's < 1.4, all p's > .16).

Data Attrition and Treatment Adherence

After treatment, 70 out of 72 participants (97%; one from each group were missing) filled out the self-report questionnaires. At the 6-, 12- and 24-month follow-up, 86%, 83%, and 78%, respectively, of the participants from the treatment group provided follow-up data. Mean adherence to treatment (defined as the number of completed modules) was 7.2 (80%). A total of 25 participants (69%) completed all of the nine modules. A total of three participants (8%) did not complete any modules at all.

Moderators of Outcome

We investigated age, gender, and education as potential moderators of outcome. Neither age nor gender were significant on any level in relation to any outcome measure. Education was significant in interaction with the initial status (intercept) on the LSAS-SR. There was, however, no significant interaction effect including education, that is, it did not moderate outcome. Hence, none of the potential moderators of outcome were included in the final models.

Main Effect of Treatment

Primary outcome.   On the LSAS-SR, we observed a statistically significant improvement, favoring the treatment compared with the wait-list, with a significant group by time interaction effect (between-group Δslope = −20.15, $p < .001$). The between-group effect size was large, with an effect size Cohen's $d = 1.05$, 95% CI: [0.62, 1.53]. Figure 3 shows the weekly mean rating on the LSAS-SR during treatment and the estimated regression slopes for both conditions.
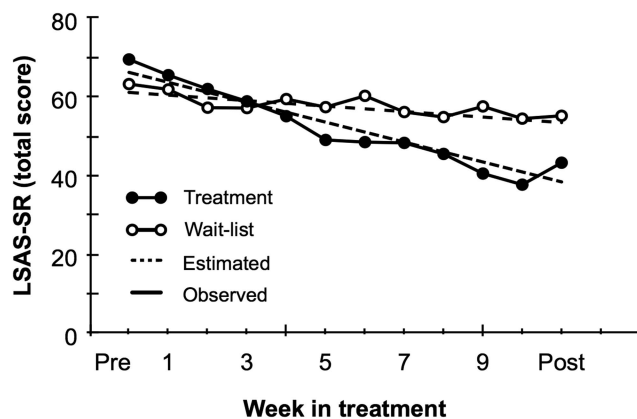
Figure 3. Weekly LSAS-SR scores. LSAS-SR = Liebowitz Social Anxiety Scale self-rated.

Secondary outcomes. Although moderate within-group effects were observed on the PHQ-9 and the GAD-7 in the treatment group (Table 2), there were no significant slope differences when compared with the improvements within the control group (group by time interactions -1.56 [$p = .16$] and -0.53 [$p = .62$], respectively). The between-group effect sizes in favor of treatment were small (Cohen's $d = 0.25$ and $d = 0.10$, for the PHQ-9 and the GAD-7, respectively).

Response and remission. Response rates in the treatment and waiting list groups were 58.3% and 27.8%, respectively. The difference was significant, $\chi^2(N = 72, df = 1) = 6.85$, $p < .01$. Remission rates were 27.8% and 11.1%, respectively. This difference was marginally significant, $\chi^2(N = 72, df = 1) = 3.19$, $p = .07$.

Clinical global improvement. Posttreatment interviews resulted in estimates of clinical global improvement according to the CGI-I (Guy, 1976; Stangier et al., 2011). In the treatment group, 29 out of 34 participants (85.3%) were improved, whereas this was true for 16 out of 35 (45.7%) in the wait-list control condition. This difference was significant, $\chi^2(N = 72, df = 1) = 10.23$, $p < .01$.

Adverse events. In the treatment group, there were no adverse events in terms of participants getting worse as measured by the CGI-I. However, in the wait-list group, there were four participants who had deteriorated. These cases were reported by the assessors to the research staff. In those cases in which it was considered needed, the participants were contacted and asked to seek additional care.

Long-Term Effects

Observed means at 6-, 12-, and 24-month follow-up for the treatment group are presented in Table 2. The linear mixed analysis showed a significant negative time coefficient for Piece 2 on the LSAS-SR, suggesting continued improvement from posttreatment to the 2-year follow-up. For the secondary measures, there was a similar trend for the GAD-7, with a significant posttreatment to 2-year follow-up improvement but no such indication for the PHQ-9. Details of these analyses are presented in Table 3.

Response rates at 6-, 12-, and 24-month follow-up were 57.8% (95% CI [40.4, 75.1]), 65.7% (95% CI [47.3, 84.0]), and 81.4% (95% CI [66.6, 96.2]), respectively. Remission rates were 30.4% (95% CI [14.2, 46.6]), 32.9% (95% CI [14.7, 51.1]), and 42.4% (95% CI: [24.1, 60.8]).

Discussion

The aim of this study was to investigate the effects of a 10-week Internet-based affect-focused PDT targeting *DSM–IV* social anxiety disorder and to evaluate its long-term effects. The main finding is that the treatment had a large effect ($d = 1.05$) on symptoms of social anxiety as compared with the wait-list control condition. The pre-post effect was substantial in the treatment group ($d = 1.45$), and we also found small but significant long-term effects, suggesting continued improvement between termination and the 2-year follow-up. In terms of response and remission rates, a majority of the treated patients (81.4%) could be categorized as responders, and almost half (42.4%) reached remission criteria on the LSAS-SR at the long-term follow-up. The efficacy of our IPDT protocol was also reflected in the blind ratings of global improvements, which favored the treatment group at termination. The effects on secondary measures were also in favor of the treatment, but nonsignificant. However, this may reflect the fact that the intake levels on PHQ-9 and GAD-7 were in the nonclinical to mild range (i.e., a floor effect) together with the fact that our sample size

Table 2
Means, SDs and Effect Sizes (Cohen's d) for Outcome Measures

Measure and group	M (SD)					Effect size Cohen's d [95% CI]	
	Pre	Post	6-month FU	12-month FU	24-month FU	Within-group, pre-post	Between-group, post-treatment
LSAS-SR							
Treatment	69.50 (21.00)	43.29 (23.69)	46.29 (25.28)	44.90 (23.62)	38.68 (19.69)	1.45 [1.06, 1.87]	1.05 [0.62, 1.53]
Control	63.25 (16.88)	55.20 (24.00)				0.40 [0.11, 0.65]	
PHQ-9							
Treatment	8.72 (6.04)	5.37 (4.34)	5.68 (5.33)	4.57 (4.16)	5.14 (4.78)	0.53 [0.29, 0.83]	0.25 [−0.07, 0.63]
Control	10.53 (6.63)	8.86 (6.55)				0.28 [0.06, 0.48]	
GAD-7							
Treatment	8.00 (4.30)	5.29 (4.38)	4.81 (4.14)	4.63 (3.92)	3.82 (2.76)	0.52 [0.25, 0.81]	0.10 [−0.30, 0.47]
Control	9.19 (6.20)	7.03 (5.61)				0.42 [0.17, 0.71]	

Note. LSAS-SR = Liebowitz Social Anxiety Scale, Self-rated; PHQ-9 = 9-item Patient Health Questionnaire Depression Scale; GAD-7 = 7-item Generalized Anxiety Disorder Scale.

Table 3

Results of the Linear Mixed-Effects Regression Analyses Within the Treatment Group

	Results of linear mixed-effects piecewise regression		
Measure and predictor	*b*	[95% CI]	*p*
LSAS-SR			
Piece 1 (Pre-Post)	−25.06	[−30.80, −19.32]	<.001
Piece 2 (Post - FU24)	−1.90	[−3.61, −0.19]	<.05
PHQ-9			
Piece 1 (Pre-Post)	−3.27	[−4.95, −1.59]	<.001
Piece 2 (Post - FU24)	−0.22	[−0.66, 0.22]	.33
GAD-7			
Piece 1 (Pre-Post)	−2.68	[−3.98, −1.39]	<.001
Piece 2 (Post - FU24)	−0.43	[−0.85, −0.01]	<.05

Note. The linear mixed-effects regression model is based on available data for the intention-to-treat sample. Piece 1 and Piece 2 in the model are the time coefficients representing population change for the active treatment phase and the follow-up phase, respectively. *b* is the unstandardized regression coefficient and can be interpreted as an effect size in the original metric of the scale (one-time unit is 10 weeks). LSAS-SR = Liebowitz Social Anxiety Scale, Self-Report; PHQ-9 = 9-item Patient Health Questionnaire Depression Scale; GAD-7 = 7-item Generalized Anxiety Disorder Scale; FU24 = 24-month follow-up.

was not powered to detect small effects. Lastly, our IPDT protocol seems to have been well tolerated, given that patients completed 80% of the modules on average and only three participants did not complete any treatment module. In summary, our findings suggest IPDT is a viable treatment option for SAD.

To our knowledge, our study is only the fourth randomized controlled trial (RCT) ever conducted on an IPDT for psychiatric conditions and the first testing IPDT specifically for SAD (Andersson et al., 2012; Johansson et al., 2012; Johansson, Björklund, et al., 2013). Thus, our results add to the growing evidence for the efficacy of Internet-based psychodynamic treatments. In addition, our study adds to the empirical base of PDT in general, especially considering that only a few randomized trials are available for SAD (Bögels et al., 2014; Leichsenring et al., 2013). Because the multicenter study by Leichsenring et al. (2013) is the largest study ever conducted on face-to-face PDT for SAD, a comparison between the results of that study and ours is warranted. In terms of patient samples, the group who received PDT in the Leichsenring et al. (2013) trial seems roughly comparable in terms of pre- and posttreatment LSAS-SR scores. Inspection of CIs of response and remission at posttreatment, as well as at follow-ups, also seems to indicate a similar rate of response/remission across both these studies. Importantly though, the psychodynamic treatments in the Leichsenring et al. (2013) study had a mean number of 25.8 sessions provided over an average of 37.4 weeks, compared with our study with nine modules over 10 weeks. Although these figures look promising, any conclusions of the differential efficacy of IPDT for SAD compared with face-to-face PDT cannot be drawn without direct comparison in a randomized trial.

Our IPDT protocol was specifically based on treatment principles derived from EDT, adding to the growing evidence base of this subgroup of affect-focused psychodynamic treatment models (Lilliengren et al., 2016). Still, although the large symptom reduction observed in the treatment group provides indirect support for the principles underlying EDT in the treatment for SAD, we cannot

claim to know the specific working mechanisms of the treatment. Future studies should investigate how potential process variables are involved in the reduction of clinical symptoms.

Another relevant question pertains to how the present study relates to research conducted on ICBT. There is strong research support for treating SAD using ICBT, both compared with wait-list control groups (Andersson, Carlbring, & Furmark, 2014) and face-to-face CBT (Andersson, Cuijpers, et al., 2014). The average effect of ICBT for SAD was estimated to *d* = 0.86 (95% CI [0.68, 1.03]) in a 2011 meta-analysis (Tulbure, 2011). More recent ICBT studies for SAD have found similar effects (Andersson, Carlbring, et al., 2014). Hence, the observed effect for IPDT in our study (*d* = 1.05, 95% CI [0.62, 1.53]) seems promising in relation to the overall effect of ICBT for SAD, suggesting that the treatments may have similar benefits in this population. Still, future trials directly comparing ICBT with IPDT for SAD are needed to elucidate this. In the only existing trial directly comparing IPDT with ICBT, Andersson et al. (2012) found no significant differences in the treatment of generalized anxiety disorder. Although that study was underpowered to detect meaningful differences, the results point to the fact that it is unknown if there are any differences in mechanisms of change between different Internet-based psychotherapy models. It is possible that both IPDT and ICBT work through similar mechanisms even though the treatment models emphasize theoretically different processes. It is also possible that both types of interventions produce similar effects but through different processes, for example, cognitive change versus emotional processing. Future comparative studies between IPDT and ICBT should include process measures that could be used to investigate mechanisms of change in Internet-based treatments (Hesser, Westin, & Andersson, 2014; Ljótsson et al., 2013).

Yet another possibility is that IPDT and ICBT may target different groups of patients. In previous research, we have observed indications suggesting that there may be differences in whether patients prefer ICBT or IPDT (Johansson, Nyblom, Carlbring, Cuijpers, & Andersson, 2013). Hence, one possibility is that there could be preference effects involved in good response to Internet-based interventions. Future research directly comparing IPDT and ICBT could clarify this, if taking preference into account.

There is also a growing body of effectiveness research supporting the implementation of ICBT in standard care (El Alaoui et al., 2015). So far, IPDT has not been evaluated in that context. However, because face-to-face PDT is frequently used in clinical practice, there may be an untapped potential for transporting IPDT protocols to that context because it is possible that psychodynamic practitioners would prefer to work with IPDT compared with ICBT.

Strengths of the study include a randomized design, rigorous intention-to-treat data analyses, proper diagnostic procedures, a standardized protocol, supervision of the therapists by the author of the protocol, and blind assessors of outcome. There are, however, also some methodological limitations that need to be considered. First, we recruited participants from the community that makes it difficult to generalize the results to patients seen in regular care. This limitation calls for future effectiveness research on psychodynamic Internet interventions. Second, there were substantial within-group effects in the wait-list condition. This effect makes the results harder to interpret. Importantly, there are recent

research summaries pointing to small but significant effects of wait-list conditions in SAD (Steinert, Stadter, Stark, & Leichsenring, 2017). Still, this factor might have biased the overall results and further highlights the need for research on specific mechanisms in IPDT. Furthermore, a limitation that needs to be addressed is the fact that the therapists were psychologists-in-training. Although they were fully trained to provide psychological treatment, and a substantial amount of training and supervision was provided in the study, there remains a possibility that the use of more experienced therapists could have resulted in even larger treatment effects. A related limitation is that the pretreatment MINI diagnostic interviews and posttreatment CGI-I ratings were also conducted by psychologists-in-training. Although the MINI interview is completely structured and hence suitable for less experienced assessors, this is still a factor that could have affected the results. A final limitation is that we did not conduct any interrater agreement tests on the assessment interviews.

In conclusion, this study provides the first initial evidence that IPDT is effective in the treatment of SAD and that these effects seem to be maintained over time. Hence, this study adds to the empirical base of Internet-delivered psychological treatments and to that of PDT in general. The findings from this study call for direct comparisons between IPDT and ICBT, as well as with IPDT and face-to-face PDT. Future research should also include investigations of mechanisms of change in IPDT and evaluations of implementations in regular care.

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