

A Danish study of One-session Treatment for Specific Phobias in Children and Adolescents

Mette Djernes Nielsen, Christina Linddahl Andreasen, Mikael Thastum*

Department of Psychology and Behavioural Sciences, Aarhus University, Denmark

*Corresponding author: mikael@psy.au.dk

Abstract

Background: One-session treatment (OST) is a short-term massed exposure therapy for the treatment of specific phobias in children and adults. Systematic reviews have demonstrated the effectiveness of the treatment for children and adolescents across countries and age groups.

Objective: A single-group open trial design was used to examine the feasibility and preliminary efficacy of OST for youths with specific phobias in a Danish context.

Method: At the Anxiety Clinic of Aarhus University, 10 youths between the ages of 7 and 17 years who fulfilled the diagnostic criteria for specific phobias were treated in accordance with the OST manual. The participants were assessed via semi-structured diagnostic interviews, clinician severity ratings, a behavioral approach test, and self- and parent report measures. Feasibility was assessed with the use of patient- and parent-report measures. Assessments were completed at before and after treatment and at the 3-month follow-up appointment.

Results: All outcome measures changed significantly from the pretreatment period to the 3-month follow-up assessment. Four (40%) of the participants were free of the targeted specific phobia after treatment, and eight (80%) were free of the phobia at the 3-month follow-up. The families were moderately satisfied with the treatment, and no patients dropped out of the study.

Conclusion: On the basis of the results of this pilot study, it may be tentatively concluded that OST could be useful for the treatment of youths with specific phobias in Denmark.

Keywords: specific phobias; children and adolescents; cognitive behavioral therapy; one-session treatment; treatment outcome

Introduction

Specific phobias are one of the most frequent mental disorders among children and adolescents (hereafter referred to as *youths*), with a lifetime prevalence of 12.5% and a mean age of onset of 7 to 9 years (1). As a result of the high prevalence of this condition and the fact that specific phobias may interfere with daily functioning, there is a need to develop and enhance efficacious treatments. Furthermore, phobias during childhood may be a significant predictor of anxiety disorders later in life (2), so it may be important to start treatment as soon as possible.

The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*, categorizes specific phobias into five subtypes: animal type,

natural environment type, blood-injection-injury type, situational type, and other type (e.g., loud noises) (3). The most frequently occurring phobia types in children and adolescents are the animal type and the natural environment type (4).

The most frequent comorbid anxiety disorders in youth with specific phobias are post-traumatic stress disorder, obsessive-compulsive disorder, and anxiety not otherwise specified; however, other comorbid disorders are common as well (5). Fifty percent of youth with specific phobias suffer from at least one other specific phobia, and 25% suffer from another mental disorder (6).

One-session treatment (OST) is a 3-hour massed single-session graduated exposure variant of

cognitive behavioral therapy (CBT) for the treatment of specific phobias (7). The treatment is based on evidence-based methods such as in vivo exposure, cognitive restructuring, psychoeducation, participant modeling, and reinforced practice. OST has been used to treat adults with specific phobias, and it has demonstrated positive long-term results over a 7.5-year period, with 65% of treated patients diagnosis-free and an additional 25% improved (7). Within the last decade, systematic reviews have also demonstrated the effectiveness of OST for the treatment of youth across different phobias, formats, countries, and age groups (8-10). Zlomke and Davis (8) found small to large uncontrolled effect sizes for OST from before to after treatment for the primary outcome measures of self-reports and observations of anxiety level. A systematic review by Davis and colleagues (10) concluded that OST demonstrated a significantly better treatment effect as compared with alternative treatments (e.g., eye movement desensitization and reprocessing, psychological placebo). On the basis of a narrative review of eight studies supporting the well-established status of OST for children with specific phobias, Ollendick and Davis (9) concluded that OST is the treatment of choice for children with specific phobias. Nielsen (11) investigated the effect of OST and found moderate to large ($d = 0.6$ to 3.26) uncontrolled effect sizes for the primary outcome measures from before to after treatment. Furthermore, when OST was compared with other active treatments, the controlled effect sizes of the outcome measures were small to moderate ($d = 0.30$ to 0.56), whereas small to large effect sizes ($d = 0.15$ to 3.39) were found when comparing OST with waitlisting. Fifty-four percent of the clients treated with OST were diagnosis-free after treatment.

OST has been found to have an effect on comorbid disorders even though they are not the target of the treatment. Ost and colleagues (12) randomized 60 youths to three conditions: OST alone, OST with a parent present, or waitlisting. They found that the two OST conditions produced significant reductions in the clinical severity rating (CSR) of the comorbid disorders. Ollendick and colleagues (13) used data from an existing randomized controlled trial of OST to examine whether the treatment outcome was affected by a patient's comorbid disorders and whether the treatment of the specific phobia had an effect on the co-occurring disorders. Results indicated that the presence of comorbid phobias and other anxiety disorders did not influence the treatment effect and that OST reduced the clinical severity of the comorbid specific phobias and other anxiety disorders not targeted by the treatment.

Homework in the form of rehearsing the skills acquired during therapy in the youth's natural environment is considered an important ingredient for maintaining or increasing treatment gains (14). A meta-analysis (15) found that the treatment of adults that included homework assignments yielded significantly better post-treatment outcomes as compared with treatment without homework, with a small controlled effect size ($d = 0.48$). However, the few studies of these effects in youths have yielded mixed results. Hughes and Kendall (16) found no significant associations between homework compliance and treatment outcomes when treating youths with mixed anxiety disorders. Arendt and colleagues (17) investigated different associations between homework and treatment outcomes and found no convincing evidence that homework compliance was related to the treatment outcomes of a CBT program for youths with mixed anxiety disorders. Alternatively, Park and colleagues (18) found a significant association between homework compliance and outcome in a CBT program for youths with a primary diagnosis of obsessive-compulsive disorder.

To produce better treatment outcomes, some studies have investigated the effect of adding a booster session to CBT. A recent meta-analysis of 53 studies that included a total of 1937 youths showed that CBT interventions that included booster sessions were more effective than CBT treatments without booster sessions for youths with anxiety disorders (19). Pretreatment and post-treatment studies with booster sessions showed significantly larger effect sizes ($r = .58$) than studies without booster sessions ($r = .45$). The researchers hypothesized that the expectation of a booster session may exert an anticipatory effect on youth outcomes before the start of the actual booster sessions. Similarly, pretreatment to follow-up studies that involved booster sessions showed a significantly larger effect size ($r = .64$) than studies without booster sessions ($r = .48$) after controlling for demographic factors, primary diagnosis, and intervention characteristics (e.g. treatment modality, number of sessions). The effect of adding a booster session to the OST manual has not been investigated yet.

Method

Participants

The participants were 10 youths (nine girls, one boy) with specific phobias who were between seven and 17 years old (mean [M], 10.5 years; standard deviation [SD], 3.0 years). They were recruited from the waiting list and via the website of the Anxiety Clinic for Children and Adolescents at Aarhus University, Denmark, and via the website of Angstforeningen

(The Danish Anxiety Society). The first 10 children and adolescents who applied for treatment and who met the DSM-IV criteria for specific phobia were included in the study. The inclusion criteria were being between seven and 17 years old and having a specific phobia diagnosis in accordance with DSM-IV. The exclusion criteria were as follows: 1) having a current diagnosis of severe behavioral disorder, untreated attention-deficit/hyperactivity disorder, selective mutism, autism spectrum disorder, intellectual disability, psychotic disorder, eating disorder requiring treatment, substance abuse, or depression; and 2) receiving other current treatment (psychotherapy or medical). The study was approved by the Ethical Committee of the local county and by the Danish Data Protection Agency. All parents signed written consent forms after the family had been given oral and written information about the treatment and before the youths began the treatment. The treatment was offered for free and took place at the Anxiety Clinic for Children and Adolescents at the Department of Psychology and Behavioural Sciences, Aarhus University, Denmark.

Assessment

Assessment before treatment

Each youth's motivation for the treatment was assessed on the basis of a shortened version of the Nijmegen Motivation List (20), which was developed by Ollendick and colleagues (21). This version has 15 items that include statements such as "I believe that this is the right treatment for me" and "I'm certain that I will also practice at home the things I learn in treatment." The statements are rated from 0 (not at all true) to 2 (mostly true). The results range from 0 to 30, and scores of less than 15 are considered to represent youths with poor motivation. Ollendick and colleagues (21) found an internal consistency of 0.73. In the present study, the Cronbach's alpha coefficient was 0.65.

The parent's credibility and expectations in relation to the treatment were assessed with the Credibility/Expectancy Questionnaire (22), which consists of four questions regarding what the parent thinks about the treatment and two questions regarding what the parent feels about the treatment. The credibility subscale was derived from the first three "think" questions (e.g., "At this point, how successful do you think this treatment will be in reducing your child's anxiety symptoms?"), and the expectancy subscale was derived from the fourth "think" question and the two "feel" questions (e.g., "How much do you think that your child's anxiety symptoms will have improved by the end of the therapy period?"). Four of the items were rated on scales that ranged from 1 (not at all logical/useful/confident) to 9 (very logical/useful/

confident), and the other two were rated on an 11-point scale from 0% to 100%. During the scoring of the questionnaire, the 11-point scale items were recoded to make them comparable with the 9-point scale items. During the recoding process, values from 40% to 60% on the 11-point scale were merged into one value that corresponded with 5 on the 9-point scale. This way of scoring the questionnaire is consistent with how the questionnaire has been scored in other studies (23). A total score between 3 and 27 for each subscale was calculated for the mothers and fathers, with higher scores indicating high credibility and positive expectations regarding the treatment. The whole scale has a Cronbach's alpha coefficient between 0.84 and 0.85. The 1-week test-retest reliability was found to be good for both the expectancy ($r = 0.82$) and the credibility ($r = 0.75$) questionnaire (22). In this study, the Cronbach's alpha coefficient of the whole scale was 0.93 for mothers and 0.91 for fathers.

Outcome measures

The Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P) (24) is a semi-structured diagnostic interview for the assessment of anxiety, including specific phobia, in children and adolescents. Interviews are conducted separately for the youths and their parents. For the ADIS-IV-C/P, all diagnoses are given a CSR from 0 (no symptoms) to 8 (very severe), with a rating of 4 or higher suggesting a clinical level of interference by the specific phobia or other assessed disorders. Separate CSRs are made by youth, parents, and clinicians; in this study, only the clinicians' CSRs are reported.

The ADIS-IV-C/P interviews were conducted by the first and second authors of this study, who were master's students at the clinic. They were both trained in the use of the ADIS-IV-C/P. The training consisted of watching two gold standard interviews on video, observing two live interviews, and conducting one satisfactory ADIS-IV-C/P interview with a client while an experienced ADIS-IV-C/P assessor observed. Both authors had also conducted several ADIS-IV-C/P interviews before working on this study. They conducted the pretreatment, post-treatment, and follow-up ADIS-IV-C/P interviews for the youths that they did not treat with therapy (each student was the therapist for 5 children). They received supervision during all of their interviews at all time points from a clinician at the clinic who did not take part in the treatment.

The ADIS-IV-C/P has shown acceptable 7- to 14-day test-retest reliability for the children and parents combined ($K = 0.62$ to 1.00) (25). Inter-rater reliability has been found to be acceptable for parent interviews ($K = 0.77$) (26). The diagnosis of specific

phobia with the ADIS-IV-C/P is convergent with high scores on the Fear Survey Schedule for Children, Revised (27). To assess the reliability of the specific phobia diagnosis for which a youth was receiving treatment, independent assessors reviewed the videotaped interviews. There was agreement about diagnosis for nine (90%) of the 10 children, and the interclass correlation coefficient for the CSR of the specific phobia diagnosis was 0.65.

The Behavioral Approach Test (BAT) is a therapist-engineered controlled situation in which the participant has to approach the feared stimulus. The BAT can be used as an objectively observed measure of the avoidance of the feared stimulus (28); it was used for this purpose in earlier studies of the effectiveness of the OST (12,21). Ollendick and colleagues (21) found a test-retest reliability of 0.87 for the percentage of steps undertaken in the BAT.

A specific BAT was made for each of the four specific phobias included in the study: dogs, darkness, heights, and being alone. Each BAT consisted of 11 or 12 steps during which the participants were gradually exposed to the feared stimulus. To provide a reliable measure of the degree of avoidance, the participants were instructed to go as far as they could. However, they were also told that they could stop at any time if they became too anxious. The participants were further instructed to stay at the stopping point, where they were asked to rate their subjective units of distress. The therapist did not interfere during the BAT.

Because the number of steps varied from one BAT to another, the percentage of completed steps was used for analysis. This kind of analysis has been used in other studies (12,21). All of the BATs were performed *in vivo*, using live dogs or live situations (i.e., a dark room, balconies at different levels, and being alone).

The Fear Thermometer is a scale that ranges from 0 (not at all) to 8 (very much) and that can be used to rate the individual's degree of fear at different time points (29). The Fear Thermometer was used to measure the participant's subjective units of distress during the BAT: before entering the BAT, at the stopping point, and 10 minutes after the BAT. Ollendick and colleagues (21) found a test-retest reliability of 0.92 for the Fear Thermometer.

The Fear Survey Schedule for Children, Revised (FSSC-R), is a self-report measure in which youths rate their fear of 80 different objects or situations on a 3-point scale ("none", "some" or "a lot"). High scores on the FSSC-R indicate the presence of significant fear and the possible presence of specific phobia. Weems and colleagues (30) found that the FSSC-R is useful for differentiating among types of phobias. The internal reliability ($\alpha = 0.96$) and the 1-week test-retest reliability ($r = 0.90$) for this measure

are high (31). In addition, the FSSC-R has been found to be stable over time (32). In this study, the Cronbach's alpha coefficient of the FSSC-R was 0.97.

The Self-Efficacy Questionnaire for Children (SEQ-C) contains 24 items that represent three domains of self-efficacy: 1) social self-efficacy (perceived capability to be included in peer relationships); 2) academic self-efficacy (perceived capability to master academic subjects); and 3) emotional self-efficacy (perceived capability to cope with negative emotions). Each item is scored on a 5-point scale from 1 (not at all) to 5 (very well) (33). The internal consistency reliability of the total self-efficacy score is satisfactory ($\alpha = .88$) (33). In this study, the Cronbach's alpha coefficient was 0.78.

At the 3-month follow-up, the youth and the parents were asked how much time the youth had spent practicing confronting the specific phobia on a daily basis since the completion of treatment. The answer categories were 0, 5, 10, 20, 30, 40, 50, and 60 minutes and more than 60 minutes. The last category (more than 60 minutes) was not used by any raters. This questionnaire will hereafter be referred to as the Estimated Amount of Training (EAT).

The youths and their parents were asked to complete the Experience of Service Questionnaire developed by the Anxiety Clinic at Aarhus University and inspired by the work of Attride-Stirling (34). This questionnaire assesses both youth and parent satisfaction with the treatment after treatment completion. Both the youths and their parents were asked to rate nine statements regarding their experience with the treatment as 0 (not true), 1 (partly true), or 2 (true). They were also asked to rate whether, in their opinions, the anxiety and avoidance of the youth changed from before to after treatment on a scale from 1 (a lot worse/more) to 7 (a lot better/less). The parents were asked to quantify any improvement they saw in the anxiety symptoms of their children. In addition, the parents were asked if there was something that they liked or disliked about the treatment and if there was anything that could be improved.

Procedure

Table 1 provides an overview of the measures used in the treatment process and the time points at which they were administered.

Procedure before treatment

After a youth had been referred to the study, a therapist performed a preliminary screening by phone with the youth's parents. If the parents' description of the symptoms passed the screening, an appointment for the diagnostic interview was made, and information about the study was mailed to the

family. At the first meeting, the child and the parents were separately interviewed using the ADIS-IV-C/P, and the family signed the informed consent form. Electronically administered rating scales (i.e.,

Nijmegen Motivation List, Credibility/Expectancy Questionnaire, FSSC-R, and SEQ-C) were e-mailed to the families to be completed before their first appearance at the clinic and at all assessment points.

TABLE 1. Summary of the Study Measures

| | Measure | Intake | Before Treatment | After Treatment | 3-Month Follow-up |
|-----------|---------------------------|--------|------------------|-----------------|-------------------|
| Parent | ADIS-IV-C/P about child | X | | X | X |
| Youth | ADIS-IV-C/P about self | X | | X | X |
| Clinician | ADIS-IV-C/P (CSR) | X | | X | X |
| Youth | NML | X | | | |
| Parent | CEQ | X | | | |
| Youth | BAT | | X | X | X |
| Youth | FT | | X | X | X |
| Youth | FSSC-R | X | | X | X |
| Youth | EAT | | | | X |
| Parent | EAT | | | | X |
| Youth | ESQ | | | X | |
| Parent | ESQ | | | X | |
| Parent | Demographic questionnaire | X | | | |
| Youth | SEQ-C | X | | X | X |

ADIS-IV-C/P, Anxiety Disorder Interview Schedule for the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, Child and Parent versions; *BAT*, Behavioral Approach Test; *CEQ*, Credibility/Expectancy Questionnaire; *CSR*, Clinical Severity Rating; *EAT*, Estimated Amount of Training; *ESQ*, Experience of Service Questionnaire; *FSSC-R*, Fear Survey Schedule for Children, Revised; *FT*, Fear Thermometer; *NML*, Nijmegen Motivation List; *SEQ-C*, Self-Efficacy Questionnaire for Children

Procedure after treatment and at follow-up

One week after treatment and at the 3-month follow-up, the child and the parents were interviewed using a reduced version of the ADIS-IV-C/P that included only sections for which the youth fulfilled the diagnostic criteria at the pretreatment screening. The families filled in the self-report forms after treatment and at the 3-month follow-up. After treatment, the family was asked about their experience with the treatment using the Experience of Service Questionnaire. At the 3-month follow-up, the family was also asked to complete the EAT. The participants who did not respond to the treatment were offered additional group or individual treatment in the clinic.

Therapists

The first and second authors of this study were therapists and master's students at the clinic. They had attended a seminar on OST given by Lars-Goran Ost, but they had no prior experience treating youths with specific phobias using the OST manual. However, as part of the master's program in psychology, the therapists had been providing supervised treatment to youths with specific phobias and other anxiety disorders for a year using the Cool Kids Program at the Anxiety Clinic, Aarhus University.

Treatment

The youths were treated for specific phobias of darkness ($n = 4$), dogs ($n = 4$), heights ($n = 1$), and being alone ($n = 1$). The treatment consisted of four parts: a pretreatment meeting, a treatment session, a post-treatment meeting, and a booster session. The first three parts followed the manual for OST (35), and the booster session was added for this study.

Pretreatment

One week before the treatment session, the therapist and the youth met for a clinical interview that lasted 45 to 60 minutes. The pretreatment plan was based on the Functional Assessment Worksheet developed by Davis and colleagues (36). The youth was encouraged to describe his or her catastrophic cognitions, maintaining factors, previous exposures, and stimulus characteristics. A fear hierarchy was developed in collaboration between the youth and the therapist, and the rationale and the content of the treatment were explained to the youth. It was made clear that the treatment was a joint effort between the therapist and the youth. The therapist assured the youth that he or she would not be exposed to a stimulus without prior warning. At the end of the session, the BAT was carried out.

Treatment session

The outcome goal of the treatment session was that the youth would be able to handle situations that he or she could not cope with before the treatment because of the specific phobia. The OST was used to show the youth that the dreaded consequences that he or she expected to happen when exposed to the feared stimulus or situation actually did not occur. This was done through controlled exposure of the youth to the feared stimulus or situation. The main element of the treatment was the massive in vivo exposure, during which the youth's catastrophic cognitions were confronted in gradually more challenging behavioral experiments. The youth had to stay in the situation until his or her anxiety decreased at least 50% according to the Fear Thermometer and preferably until it had vanished completely. It was important that the youth not be pushed into unexpected exposures. Rather, the youth and therapist continuously worked together on the next step. If it was helpful for the youth, the therapist could perform a step before the youth did as part of the exposure. The treatment session was limited to three hours.

Post-treatment

One week after the treatment session, the youth and therapist met again. The youth was asked to repeat the rationale of the treatment and to remember how the rationale was connected to the phobia. The treatment session was summed up by looking back at what the youth's problem looked like before treatment and how the catastrophic thoughts had gradually changed during the session. Furthermore, the youth was told that it is important to continue working with the skills achieved during the treatment for the next 6 months to maintain treatment gains. At the end of the meeting, instructions for how to deal with potential setbacks were given. The post-treatment session lasted 30 to 45 minutes.

Booster session

Three months after the treatment session, the therapist, the youth, and the parents met for the last time. The therapist asked the family how successful the training had been since the post-treatment session and if they had experienced any difficulties with continuing the training. If the family had forgotten or did not understand specific elements of the treatment, these elements were explained again. The booster session is not a part of Ost's original program (7), but it was included in the present study because it was hypothesized that a booster session would improve homework compliance and thereby increase treatment gains.

Statistical analysis

Within-group changes in the primary outcome measures and the SEQ-C scores from the three points in time were examined to evaluate treatment effects. Not all of the data were normally distributed. However, because the parametric paired samples *t*-test yielded results similar to the non-parametric alternative Wilcoxon signed-rank test, the results of the parametric test are reported. Effect sizes were calculated with the use of Cohen's *d* (37). Remission rates were examined using percentages.

Stepwise multiple regression analyses were conducted with the total ADIS-IV-C/P CSR scores at the 3-month follow-up as the criterion variables. The post-treatment total ADIS-IV-C/P CSR criterion variable was inserted as the first step, and EAT was inserted as the second step. Separate analyses were conducted on the basis of the EAT reports of each youth and his or her mother and father. Analyses were based on all 10 participants. Because the mother of one of the youths (Patient ID no. 6) reported an EAT far higher than either the father or the youth, the mother's score was interpreted as an error and replaced by the same score that the youth had reported. All statistical analyses were carried out using Statistical Product and Service Solutions software version 20.

Results

All participants completed the treatment, including the post-treatment and follow-up sessions. Thus, there were no dropouts from treatment.

At the pretreatment assessment, the youths had an average of 3.6 anxiety diagnoses (SD, 3.4). Six of the 10 participants had at least one additional disorder besides the specific phobia. Two of the youths had other specific phobias, and the other four had three or more comorbid anxiety disorders. The diagnoses included other specific phobias [14], generalized anxiety disorder [4], social phobia [3], and separation anxiety disorder [2]. An overview of the specific disorders of each participant is presented in Table 2.

The youths' motivation score on the shortened version of the *Nijmegen Motivation List* had a mean of 22.5 (SD, 3.1; range, 16 to 27) out of the possible maximum of 30 points. Because none of the participants' scores were less than 15, all participants were considered to be motivated to complete the treatment (21).

The credibility of the treatment was relatively high for the mothers (M, 20.2; SD, 3.6) and the fathers (M, 19.6; SD, 4.0), with a maximum score of 27. The expectancy score was moderate for the mothers (M, 16.0; SD, 5.0) and the fathers (M, 17.0; SD, 4.2), also with a maximum score of 27. One question—"How much do you expect that your child's anxiety symptoms will have improved by the end of the

treatment?”—was analyzed separately to compare the expected improvement before treatment with a similar question asked after treatment, when the parents were asked about how large of an improvement they noticed in their children’s anxiety symptoms after the end of treatment. Nineteen out

of 20 parents answered the question, which was rated on an 11-point scale from 0 to 100%. All parents expected at least some change in their children’s anxiety symptoms. Thirteen (68.4%) expected that their children’s anxiety symptoms would improve by 50% or more.

TABLE 2. Diagnoses and Clinical Severity Ratings before treatment, after treatment, and at 3-Month Follow-up

| Patient ID No. | Diagnoses Before Treatment (CSR) | Diagnoses After Treatment (CSR) | Diagnoses at 3-Month Follow-up (CSR) |
|----------------|----------------------------------|---------------------------------|--------------------------------------|
| 1 | SP darkness (6) | SP darkness (5) | SP darkness (3) |
| 2 | SP darkness (7) | SP darkness (6) | - |
| | GAD (7) | GAD (4) | GAD (4) |
| | SAD (6) | SAD (6) | SAD (4) |
| | SoP (4) | SoP (3) | SoP (7) |
| | SP throwing up (8) | SP throwing up (8) | SP throwing up (7) |
| | SP elevators (5) | SP elevators (4) | SP elevators (2) |
| | SP flights (4) | SP flights (5) | - |
| | SP spiders (4) | SP spiders (2) | - |
| | SP dentists (7) | SP dentists (6) | - |
| | SP ferry (4) | - | - |
| 3 | SP dogs (6) | SP dogs (7) | SP animals (7) |
| | GAD (7) | GAD (6) | GAD (7) |
| | SoP (4) | SoP (6) | - |
| | SP darkness (4) | SP darkness (6) | - |
| | SP needles (5) | SP needles (2) | - |
| | SP blood (5) | SP blood (5) | - |
| | SP elevators (5) | SP elevators (5) | SP elevators (6) |
| | SP dentists (4) | SP dentists (6) | SP dentists (4) |
| | SP roller coasters (4) | SP roller coasters (1) | - |
| 4 | SP heights (4) | - | - |
| | SoP (5) | SoP (6) | SoP (6) |
| | GAD (7) | GAD (5) | GAD (3) |
| | SP insects (5) | SP insects (6) | SP insects (6) |
| 5 | SP darkness (5) | - | - |
| | SP loud noises (4) | SP loud noises (4) | - |
| 6 | SP darkness (5) | - | - |
| 7 | SP dogs (6) | SP dogs (4) | SP dogs (3) |
| 8 | SP being alone (7) | SP being alone (6) | - |
| | SAD (5) | SAD (5) | - |
| | GAD (6) | GAD (4) | - |
| | SP insects (7) | SP insects (2) | SP insects (3) |
| | SP darkness (6) | SP darkness (4) | - |
| 9 | SP dogs (7) | SP dogs (6) | SP dogs (6) |
| | SP cats (6) | SP cats (6) | SP cats (6) |
| 10 | SP dogs (5) | - | - |

Note: CSR, Clinical Severity Rating; GAD, generalized anxiety disorder; SAD, separation anxiety disorder; SoP, social phobia; SP, specific phobia

More than half (55%) of the parents felt that their children’s anxiety symptoms improved by 50% or more. Thus, the experienced improvement after treatment was less than the expected improvement before treatment. All parents noticed at least a small (10%) improvement in their children’s symptoms, but none of the parents felt that the symptoms had completely disappeared.

The CSR scores decreased significantly from before to after treatment and from pretreatment to 3-month follow-up, with large effect sizes. There was no significant difference between post-treatment and 3-month follow-up scores, but the effect size was moderate. The total ADIS-IV-C/P CSR for all diagnoses decreased significantly from before to after

treatment, from pretreatment to 3-month follow-up, and from post-treatment to 3-month follow-up, with small to large effect sizes (Table 3).

After treatment, four participants (40%) were free of the specific phobias that were treated; at the 3-month follow-up, eight participants (80%) were. Furthermore, at both the post-treatment and 3-month follow-up evaluations reductions, in the severity of the comorbid disorders were found for five (83.3%) of the six participants with comorbid disorders diagnosed before treatment. After treatment, two participants (20%) were free of all diagnoses; at the 3-month follow-up, six participants (60%) were diagnosis-free. Table 2 shows an overview of the changes in the diagnoses over time

for the 10 participants. The specific phobias that were treated are highlighted.

The percentage of steps completed during the BAT increased significantly from before to after treatment and from pretreatment to 3-month follow-up, with large effect sizes. The difference between the post-treatment and 3-month follow-up evaluations was not significant, and the effect size was small (see Table 3).

The rating of subjective fear at the stopping point of the BAT decreased significantly from before to after treatment and from pretreatment to 3-month follow-up, with large effect sizes. The difference between post-treatment and 3-month follow-up was not significant, and the effect size was small (see Table 3).

TABLE 3. Pretreatment, Post-treatment and 3-Month Follow-up Primary Outcome Measures

| Outcome Measure | Pre-treatment Mean (SD) | Post-treatment Mean (SD) | 3-Month Follow-up Mean (SD) | t Value, Pre-treatment to Post-treatment (df) | t Value, Pre-treatment to 3-Month Follow-up (df) | t Value, Post-treatment to 3-Month Follow-up (df) | Pre-treatment to Post-treatment Effect Size | Pre-treatment to 3-Month Follow-up Effect Size | Post-treatment to 3-Month Follow-up Effect Size |
|---|-------------------------|--------------------------|-----------------------------|---|--|---|---|--|---|
| ADIS-IV-C/P CSR for the specific phobia treated with OST | 5.8 (1.0) | 3.4 (3.0) | 1.9 (2.7) | 3.5 (9)** | 4.9 (9)*** | 1.9 (9) | 1.1 | 1.9 | 0.5 |
| Total ADIS-IV-C/P CSR for all diagnoses | 19.6 (18.3) | 15.1 (16.7) | 8.4 (9.7) | 3.6 (9)** | 3.1 (9)* | 2.4 (9)* | 0.3 | 0.8 | 0.5 |
| Percentage of BAT steps completed | 42.6 (31.3) | 69.5 (36.5) | 80.0 (32.8) | -3.1 (9)* | -3.8 (9)** | -2.1 (9) | 0.8 | 1.2 | 0.3 |
| Subjective fear as measured by the FT at the BAT stopping point | 6.6 (1.0) | 2.6 (2.2) | 2.3 (1.9) | 4.7 (8)** | 5.3 (8)*** | 1.0 (8) | 2.3 | 2.8 | 0.2 |
| FSSC-R score | 144.9 (31.2) | 129.8 (31.1) | 120.4 (32.8) | 3.6 (9)** | 5.5 (9)**** | 3.5 (9)** | 0.5 | 0.8 | 0.3 |
| SEQ-C score | 79.6 (11.3) | 83.7 (17.0) | 86.1 (17.8) | -1.1 (9) | -2.1 (9) | -0.7 (9) | 0.3 | 0.4 | 0.1 |

*p < .05; **p < .01; ***p ≤ .001; ****p < .001

ADIS-IV-C/P, Anxiety Disorder Interview Schedule for the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, Child and Parent versions; BAT, Behavioral Approach Test; CSR, Clinical Severity Rating; DF, differential; FSSC-R, Fear Survey Schedule for Children, Revised; FT, Fear Thermometer; OST, one-session treatment; SD, standard deviation; SEQ-C, Self-Efficacy Questionnaire for Children

Twenty-eight (93.3%) of the youths and their parents found that the treatment had helped the youths, at least partly; only one parent and one youth did not find the treatment helpful. Twenty-nine (96.7%) of the youths and their parents would recommend the treatment to others with similar problems. Only one parent would not recommend the treatment. Except for one youth, one mother, and one father from different families, all families answered “not true” to the following statement: “The treatment was causing me/my child to feel worse.” The parents were also given an open-ended question: “Was there something that you didn’t like or that can be improved?” Only eight (40%) of the parents answered the question. Half of the responses were concerns about the shortness of the treatment. One parent suggested that the treatment could be improved by adding another exposure session.

Twelve (60%) of the parents answered the question, “What was good about the treatment?” Two answers in particular appeared most often: that they felt that they were in safe hands with the therapists (n = 5) and that they found the development and implementation of the fear hierarchy to be helpful (n = 4).

The FSSC-R scores decreased significantly with all three comparisons: before to after treatment, with moderate effect sizes; pretreatment to 3-month follow-up, with large effect sizes; and post-treatment to 3-month follow-up, with small effect sizes (see Table 2).

No significant differences in self-efficacy were found between the three time points. The effect size from post-treatment to 3-month follow-up was less than small, the effect size from before to after treatment was small, and the effect size from

pretreatment to 3-month follow-up was small to moderate (see Table 3).

Table 4 shows the EAT that the youth had, on average, spent on a daily basis confronting the phobia treated during the OST according to the youth, the mother, and the father. Youths reported having spent an average of 20.5 minutes (SD, 23.4 minutes) per day practicing confronting their specific phobias. Mothers reported that their children spent an average of 17.0 minutes (SD, 14.9 minutes), and fathers

reported an average of 13.0 minutes (SD, 15.1 minutes). At 3-month follow-up, the total ADIS-IV-C/P CSRs after treatment and the EATs reported by the youths, the mothers, and the fathers were significant with regard to their prediction of the total ADIS-IV-C/P CSRs: the more time that a youth spent practicing, the lower the total ADIS-IV-C/P CSR. Table 5 shows the results of the multiple regression analyses at 3-month follow-up.

TABLE 4. Daily Number of Minutes Spent Confronting the Specific Phobia Between the Post-treatment and 3-Month Follow-up Evaluations

| Patient ID No. | Youth's Report | Mother's Report | Father's Report |
|----------------|----------------|-----------------|-----------------|
| 1 | 5 | 5 | 10 |
| 2 | 40 | 30 | 10 |
| 3 | 60 | 30 | 30 |
| 4 | 5 | 5 | 5 |
| 5 | 10 | 10 | 5 |
| 6 | 10 | 10* | 5 |
| 7 | 5 | 15 | 5 |
| 8 | 60 | 50 | 50 |
| 9 | 5 | 10 | 5 |
| 10 | 5 | 5 | 5 |

*This number was adjusted; see the Statistical Analysis section of the text

TABLE 5. Summary of Multiple Regression Analyses of Total Clinical Severity Ratings of Anxiety Disorder Interview Schedule for the DSM-IV, Child and Parent versions, at 3-Month Follow-up Evaluations

| Step | Predictor Variables | Criterion Variables | | |
|------|--------------------------------------|---------------------|--------------|----------|
| | | β | ΔR^2 | <i>p</i> |
| 1 | Post-treatment total ADIS-IV-C/P CSR | 1.378 | .836 | .000 |
| 2 | Youth-reported homework | -.593 | .137 | .001 |
| 1 | Post-treatment total ADIS-IV-C/P CSR | 1.230 | .836 | .000 |
| 2 | Mother-reported homework | -.469 | .120 | .003 |
| 1 | Post-treatment total ADIS-IV-C/P CSR | 1.118 | .836 | .000 |
| 2 | Mother-reported homework | .386 | .108 | .008 |

Note. ADIS-IV-C/P, Anxiety Disorder Interview Schedule for the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Child and Parent versions; CSR, Clinical Severity Rating

Discussion

This pilot study evaluated the OST program for youths with specific phobias at the Anxiety Clinic for Children and Adolescents at Aarhus University in Denmark using a single group open trial design. This is the first time that the program has been evaluated in Denmark.

There were no dropouts from the treatment, and both parents and youth expressed a moderate degree of satisfaction with the treatment. None of the youths or their parents reported that the treatment was causing the youth to feel worse, and nine of the youths (90%) and 19 of the parents (95%) found the treatment to be at least partly helpful. Most of the families would recommend the treatment to a friend in a similar situation. More than half of the parents (55%) expressed that they saw an improvement of

50% or more in their children's symptoms after the end of treatment. Thus, although the treatment seemed to be well accepted, the treatment satisfaction rate could have been higher. A possible reason for the moderate satisfaction score could be that the improvements of the youth observed by the parents did not correspond with the expectations of the parents before the treatment began. This may also explain why four parents stated that the treatment was too short. Had there been a satisfaction assessment at the 3-month follow-up evaluation, the scores may have been higher, because there were significant improvements in the FSSC-R scores and total ADIS-IV-C/P CSRs for all diagnoses between the post-treatment and 3-month follow-up meetings. In addition, the total number of youths who were diagnosis-free regarding the treated

phobia doubled from the post-treatment evaluation to the 3-month follow-up.

Significant improvements were seen from before to after treatment and from post-treatment to 3-month follow-up on all outcome measures except for self-efficacy. At the post-treatment assessment, four of the participants (40%) were free of the specific phobia that was treated, and this number had doubled by the time of the 3-month follow-up evaluation (80%).

In this study, the percentage of participants who were free of the specific phobia after treatment was below the average of 54% that was found in a review of the current status of OST (11). One possible reason for this may be that the therapists in this study had no prior experience with the use of the OST manual. Only two other studies have examined the number of youths who were diagnosis-free of the specific phobia at follow-up after treatment with OST. Ollendick and colleagues (38) found that 67.4% of youth were diagnosis free at 6-month follow-up; in a previous study, Ollendick and colleagues (21) had found that 49% of youth were diagnosis-free at that time point. As compared with the results of these two studies, the current study had better 3-month follow-up results. The addition of a booster session may have positively influenced the results of the present study.

One possible mediator of the improvement seen from the time of the post-treatment evaluation to the 3-month follow-up may be the amount of time spent confronting the specific phobia after the end of treatment. This hypothesis is supported by the results: the amount of homework completed between the post-treatment meeting and the 3-month follow-up appointment significantly predicted the total ADIS-IV-C/P CSR at follow-up after controlling for the total ADIS-IV-C/P CSR after treatment. It is difficult to compare this finding with other studies that have investigated the effect of homework. Although the current study only has one retrospective measure of homework, other studies have investigated the effect of homework in longer treatment programs, where homework has often been rated on a weekly basis. It is possible that our measure was more biased than would be the case if the homework had been rated on a weekly basis.

No other studies that have investigated the effectiveness of OST have examined the influence of homework on the outcome variables, so it is not possible to compare the results of this study with other studies of OST.

The results of this study are in line with the results of the meta-analysis by Kazantzis and colleagues (15), which found that treatments of adults that included homework assignments yielded significantly better results than treatments without homework.

Because the results of using homework assignments when treating youths with anxiety are mixed (16-18), more studies are needed to investigate this association further.

Although the treatment described in the current study only focused on the targeted specific phobia, the severity of the comorbid disorders was reduced after treatment and at 3-month follow-up. These findings are in line with those of earlier studies (12,13), which have demonstrated that OST also reduces the severity of non-targeted comorbid disorders. Participants may be able to generalize the skills acquired from this time-limited treatment to other situations. Ost and colleagues (12) suggested that the increase in self-efficacy that is usually found after OST (39) helps participants to deal with their problems in more constructive ways, which leads to improvements in their symptoms. However, no increase in self-efficacy over time as measured by the SEQ-C was found in the present study. During the exposure portion of the treatment, many of the youths were observed verbalizing statements such as "I can already feel a difference. Yesterday I wouldn't dare to have done what I just did" and "I did not believe that I was able to do it so fast." When leaning her body over a fifth-floor railing, one of the youths with a specific phobia of heights exclaimed, "It's crazy, I don't think I ever have been so high up. I can easily live in an apartment on the sixth floor." The responders seemed to be proud of their accomplishments, and these feelings may be generalizable and help them to deal with other comorbid conditions after successful treatment. This effect on untreated comorbid disorders is noteworthy, because standard treatment for generalized anxiety disorder, separation anxiety disorder, and other similar conditions typically requires 10 to 16 CBT sessions (13).

Although the follow-up results were promising, two of the participants (20%) were still suffering from the treated specific phobia. The two non-responders had very different characteristics before entering treatment. One of them had only one comorbid disorder, whereas the other had six additional specific phobias and two other comorbid conditions. Because low motivation is associated with low treatment response, this could have been a predictor of non-response. The two non-responders had scores of 20 and 26 for the shortened version of the Nijmegen Motivation List. The average motivation score was 22.5, with a standard deviation of 3.1. The score of 20 is within one standard deviation below the mean, and the score of 26 is just above one standard deviation from the mean. Therefore, their motivation does not seem to be a factor that can explain the non-response. The non-responder group did not appear to have any

characteristics that differed from the responding group, except for the fact that the non-responders were among the youngest participants. It could be interesting for a future study with a bigger sample size to investigate whether age predicts non-response to OST.

Because the two non-responders had no differentiating characteristics, the reason for non-responsiveness may be associated with the treatment. This could be an issue if the functional assessment did not reveal the relevant cognitions associated with the specific phobia or if the most relevant phobic stimulus was not used in the treatment. It has been suggested that it may sometimes be necessary to administer a second or a third session of OST to produce a better treatment outcome (9). Future studies should investigate when the addition of another treatment session improves treatment outcomes, especially among non-responding youths.

Limitations of the study

The results of this study should be viewed with caution due to the most important limitations: the small sample size and the lack of randomization to a control group, which limited the internal validity of the study. Future studies should investigate the effectiveness of OST as compared with active and passive control groups in Denmark, and they should include larger sample sizes. Another limitation is the lack of a comparison group treated with the standard OST procedure without the addition of the booster session.

In addition, the same two individuals served as assessors, therapists, and researchers. Although the results of the post-treatment and 3-month follow-up assessments were discussed with an external assessor, the results may be biased. The therapists did not have prior experience using the OST manual, and the therapists' adherence to the manual was not assessed.

Conclusion

On the basis of the results of this small single group pilot study, it can be tentatively concluded that OST may be useful for the treatment of Danish youths with specific phobias. Significant improvements in all primary outcome measures appeared between the pretreatment to 3-month follow-up assessments. In addition to the changes in the targeted specific phobias, significant improvements were also observed in the participants' non-targeted comorbid anxiety disorders. Patient self-efficacy did not increase significantly after the end of treatment. The families were at least moderately satisfied with the treatment, and there were no patients who dropped out of treatment.

Conflicts of interest

The authors declare no conflicts of interest. The study received no financial support.

References

1. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2005;62(6):593-602.
2. Fichter MM, Kohlboeck G, Quadflieg N, Wyszkon A, Esser G. From childhood to adult age: 18-year longitudinal results and prediction of the course of mental disorders in the community. *Soc Psychiatry Psychiatr Epidemiol* 2009;44(9):792-803.
3. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. American Psychiatric Association; 1994.
4. Fonseca AC, Perrin S. The clinical phenomenology and classification of child and adolescent anxiety. In: Silverman WK, Field AP (Eds.). *Anxiety disorders in children and adolescents*. 2 ed. Cambridge University Press; 2011. p. 25-55.
5. Essau CA, Conradt J, Petermann F. Frequency, comorbidity, and psychosocial impairment of depressive disorders in adolescents. *J Adolesc Res* 2000;15(4):470-81.
6. Costello EJ, Egger HL, Copeland W, Erkanli A, Angold A. The developmental epidemiology of anxiety disorders: phenomenology, prevalence, and comorbidity. In: Silverman WK, Field AP (Eds.). *Anxiety disorders in children and adolescents*. 2 ed. Cambridge: Cambridge University Press; 2011. p. 56-75.
7. Ost LG. One-Session treatment for specific phobias. *Behav Res Ther* 1989;27(1):1-7.
8. Zlomke K, Davis TE. One-Session Treatment of specific phobias: a detailed description and review of treatment efficacy. *Behav Ther* 2008;39(3):207-23.
9. Ollendick TH, Davis TE. One-session treatment for specific phobias: a review of Ost's single-session exposure with children and adolescents. *Cogn Behav Ther* 2013;42(4):275-83.
10. Davis TE, Jenkins WS, Judy BM. Empirical status of one-session treatment. In: Davis TH, Ollendick TH, Ost LG (Eds.). *Intensive one-session treatment of specific phobias*. New York: Springer; 2012.
11. Nielsen MD. One-session treatment for treating children and adolescents with specific phobia. A systematic review of the empirical status of one-session treatment and a pilot study investigating the efficacy and feasibility of one-session treatment in a Danish context. Aarhus University; 2015.
12. Ost LG, Svensson L, Hellstrom K, Lindwall R. One-session treatment of specific phobias in youths: a randomized clinical trial. *J Consult Clin Psychol* 2001;69(5):814-24.
13. Ollendick TH, Ost LG, Reuterskiold L, Costa N. Comorbidity in youth with specific phobias: impact of comorbidity on treatment outcome and the impact of treatment on comorbid disorders. *Behav Res Ther* 2010;48(9):827-31.
14. Hudson JL, Kendall PC. Showing you can do it: homework in therapy for children and adolescents with anxiety disorders. *J Clin Psychology* 2002;58(5):525-34.
15. Kazantzis N, Whittington C, Dattilio F. Meta-analysis of homework effects in cognitive and behavioral therapy: a replication and extension. *Clin Psychol Sci Prac* 2010;17(2):144-56.
16. Hughes AA, Kendall PC. Prediction of cognitive behavior treatment outcome for children with anxiety disorders: therapeutic relationship

- and homework compliance. *Behav Cogn Psychother* 2007;35(4):487-94.
17. Arendt K, Thastum M, Hougaard E. Homework adherence and cognitive behaviour treatment outcome for children and adolescents with anxiety Disorders. *Behav Cogn Psychother* 2016;44(2):225-35.
 18. Park JM, Small BJ, Geller DA, Murphy TK, Lewin AB, Storch EA. Does D-cycloserine augmentation of CBT improve therapeutic homework compliance for pediatric obsessive-compulsive disorder? *J Child Fam Stud* 2014;23(5):863-71.
 19. Gearing RE, Schwalbe CSJ, Lee R, Hoagwood KE. The effectiveness of booster sessions in Cbt treatment for child and adolescent mood and anxiety disorders. *Depress Anxiety* 2013;30(9):800-8.
 20. Keijsers GPJ, Schaap CPDR, Hoogduin CAL, Hoogsteyns B, de Kemp ECM. Preliminary results of a new instrument to assess patient motivation for treatment in cognitive-behaviour therapy. *Behav Cogn Psychother* 1999;27(2):165-79.
 21. Ollendick TH, Ost LG, Reuterskiold L, et al. One-session treatment of specific phobias in youth: a randomized clinical trial in the United States and Sweden. *J Consult Clin Psychol* 2009;77(3):504-16.
 22. Devilly GJ, Borkovec TD. Psychometric properties of the credibility/expectancy questionnaire. *J Behav Ther Exp Psychiatry* 2000;31(2):73-86.
 23. Nock M, Ferriter C, Holmberg E. Parent beliefs about treatment credibility and effectiveness: assessment and relation to subsequent treatment participation. *J Child Fam Stud* 2007;16(1):27-38.
 24. Albano AM, Silverman WK. Anxiety disorders interview schedule for DSM - IV. Child version. Oxford: Oxford University Press; 1996.
 25. Silverman WK, Saavedra LM, Pina AA. Test-retest reliability of anxiety symptoms and diagnoses with the anxiety disorders interview schedule for DSM-IV: child and parent versions. *J Am Acad Child Adolesc Psychiatry* 2001;40(8):937-44.
 26. Grills AE, Ollendick TH. Issues in parent-child agreement: the case of structured diagnostic interviews. *Clin Child Fam Psychol Rev* 2002;5(1):57-83.
 27. Ollendick TH, Davis TE. Evidence-based assessment and treatment of specific phobias in children and adolescents. In: Davis TE, Ollendick TH, Ost LG (Eds.). *Intensive one-session treatment of specific phobias*. New York: Springer; 2012.
 28. Lang PJ, Lazovik AD. Experimental desensitization of a phobia. *J Abnorm Soc Psychol* 1963;66(6):519-25.
 29. Walk RD. Self ratings of fear in a fear-invoking situation. *J Abnorm Soc Psychol* 1956;52(2):171-8.
 30. Weems CF, Silverman WK, Saavedra LM, Pina AA, Lumpkin PW. The discrimination of children's phobias using the Revised Fear Survey Schedule for children. *J Child Psychol Psychiatry* 1999;40(6):941-52.
 31. Werry JS, Aman MG. *Practitioners guide to psychoactive drugs for children and adolescents*. 2 ed. New York: Plenum Publisher Corporation; 1998.
 32. Ollendick TH. Reliability and validity of the Revised Fear Survey Schedule for children (Fssc-R). *Behav Res Ther* 1983;21(6):685-92.
 33. Muris P. A brief questionnaire for measuring self-efficacy in youths. *J Psychopathol Behav Assess* 2001;23(3):145-9.
 34. Attridge-Stirling J. *Development of methods to capture users' views of child and adolescent mental health services in clinical governance reviews*. London: Commission for Health and Improvement; 2002.
 35. Ost LG. *Manual for the 1-session treatment of specific phobias*. 2 ed. American Psychological Association; 2010.
 36. Davis TE, Ollendick TH, Reuther ET, Munson MS. One-session treatment: principles and procedures with children and adolescents. In: Davis TE, Ollendick TH, Ost LG (Eds.). *Intensive one-session treatment of specific phobias*. New York: Springer; 2012.
 37. Cohen J. *Statistical power analysis for the behavioral sciences*. Hillsdale, N.J.: Lawrence Erlbaum Associates; 1990.
 38. Ollendick TH, Halldorsdottir T, Fraire MG, et al. Specific phobias in youth: a randomized controlled trial comparing one-session treatment to a parent-augmented one-session treatment. *Behav Ther* 2015;46(2):141-55.
 39. Ost LG, Ferebee I, Furmark T. One-session group therapy of spider phobia: direct versus indirect treatments. *Behav Res Ther* 1997;35(8):721-32.