

One-Session Treatment of Specific Phobias: A Detailed Description and Review of Treatment Efficacy

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One-Session Treatment (OST) is a form of massed exposure therapy for the treatment of specific phobias. OST combines exposure, participant modeling, cognitive challenges, and reinforcement in a single session, maximized to three hours. Clients are gradually exposed to steps of their fear hierarchy using therapist-directed behavioral experiments. Although there are several studies in the literature examining the efficacy of OST, little has been done to summarize this research. In the following review, research on and empirical support for OST are reviewed with an emphasis on the types of stimuli, samples, and methodologies utilized. Research generally supports OST's efficacy, although replication by independent examiners using adult and child samples is needed using more rigorous comparisons (e.g., psychological placebo or other treatments). Overall, OST continues to be a promising treatment for specific phobias; however, a great deal more investigation is needed to identify mechanisms of change, mediators, and moderators.

MANY VARIANTS of empirically supported, exposure-based treatment exist, including systematic desensitization, reinforced practice, participant modeling, and cognitive-behavioral therapy (see [Davis & Ollendick, 2005](#); [Ollendick & King, 1998](#)). One such variant, however, is unique in its combination of efficacious techniques over a relatively brief and intense but well-tolerated session. One-session treatment (OST), developed by Lars-Göran Öst and described in [Öst \(1985, 1987, 1989, 1997\)](#) and

[Öst and Ollendick \(2001\)](#), is an efficacious, cognitive-behavioral treatment for specific phobia that has spurred a great deal of research in the last decade. During a single session, maximized to 3 hours, a therapist and client collaboratively work through the steps of the client's fear hierarchy ([Öst, 1989, 1997](#)). Controlled clinical studies of behavioral interventions for specific phobia suggest a positive response rate of 76% or better in studies examining OST ([Arntz & Lavy, 1993](#); [de Jong, Vorage, & van den Hout, 2000](#); [Hellström & Öst, 1995](#); [Koch, Spates, & Himle, 2004](#); [Öst, 1996](#); [Öst, Fellenius, & Sterner, 1991](#); [Öst, Ferebee, & Furmark, 1997](#); [Öst, Hellström, & Kåver, 1992](#); [Öst, Salkovskis, & Hellström, 1991](#)).

Although a relatively large body of research exists to support the efficacy of OST, it is surprising that no review of that literature exists. Little effort has been made to evaluate the literature on OST or further describe components involved in treatment. Therefore, the purpose of this review is to further describe the components and techniques of OST, as described by Öst ([Öst, 1989, 1997](#); [Öst & Ollendick, 2001](#)) and as it has subsequently been employed, and to review and summarize the empirical support for OST using empirically supported treatment (EST) guidelines (cf. [Task Force, 1995](#)).

Overview of OST

A client's exposure to his or her relevant fear-evoking object or situation is the central treatment component in most efficacious interventions for specific phobias. OST differs from traditional in vivo exposure in that clients are gradually exposed to their entire fear hierarchy during a single session. OST includes the active participation of the therapist in activities such as modeling, challenging

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catastrophic cognitions, and collaborating on behavioral experiments (i.e., negotiated exposure steps). As such, OST has been suggested to explicitly target all three response components of anxiety (physiological, behavioral, and cognitive) typically seen in individuals with specific phobias, whereas many of the traditional variants of exposure therapy for specific phobias emphasize a single response component (Davis & Ollendick, 2005).

The foundations of OST are in vivo exposure and participant modeling, with the goal being a graduated, systematic, and prolonged exposure to feared stimuli combined with the dissuading and repair of faulty cognitions (Öst, 1989). Although Öst broadly described OST along these lines (Öst, 1989, 1997), a finer analysis unveils additional components. In addition to exposure and participant modeling, OST includes psychoeducation, skills training, reinforcement, and cognitive challenges (Davis & Ollendick, 2005; Öst & Ollendick, 2001). OST has been studied in several different formats, including individual and group exposure (direct and indirect) and in children with and without parental involvement during the child session.

Description of OST

Öst (1989, 1997) suggested that OST relies heavily upon in vivo exposure. Exposure during cognitive-behavioral therapy (CBT) frequently includes cognitive therapeutic techniques, and in this regard, OST is no different. Although exposure is typically described as a behavioral mechanism, exposure in OST is conducted in a way that allows for the evaluation of the client's catastrophic cognitions about the phobic stimulus (Öst, 1997). The exposure component of OST is conducted differently from typical in vivo procedures. Rather than a formal, linear hierarchy, in vivo exposure in OST progresses as a series of behavioral experiments. The behavioral experiments are suggested to work in three ways: to encourage the habituation and extinction of fear, to allow for active elicitation and challenging of catastrophic cognitions, and to prevent behavioral and cognitive avoidance. During the experiment, the therapist prompts the client for his or her catastrophic cognitions and encourages the client to draw more rational conclusions from the interactions with the stimulus. Following an experiment, a client's success or failure on the task is discussed and the next behavioral experiment results from this discussion.

GENERAL DESCRIPTION

The goal during each step in the client's fear hierarchy is to expose the client to the feared stimulus

until the client's subjective report of his or her anxiety is decreased by at least 50% or has completely disappeared (Öst, Svanesson, Hellström, & Lindwall, 2001). This is accomplished through the prevention of behavioral and cognitive avoidance until the anxiety has decreased (Öst, 1989, 1997). Importantly, Öst (1997) construed anxiety as encompassing both the physiological and subjective distress experienced by the client. Davis and Ollendick (2005) explained that behaviorally, OST directs a therapist to prevent avoidance of the phobic stimulus. If during the completion of a step a client wishes to go no closer, the therapist actively attempts to prevent the client from moving or looking away. Additionally, cognitive avoidance is to be prevented. This requires the therapist to deal actively with the client's catastrophic cognitions during treatment and encourage the client to realize that the feared negative consequences will not occur or that, if they do occur, they are not as aversive as anticipated. Öst (1989) suggests that the length of time spent on each step of the hierarchy be guided by the client's subjective report of anxiety as well as erroneous cognitive beliefs regarding the phobic situation. Davis and Ollendick (2005) go on to suggest that a decrease in physiological arousal is an additional component to consider when gauging client readiness to progress to further steps. By including the reduction of physiological arousal in determining readiness to progress, OST attempts to offer a comprehensive intervention actively targeting all three components of the phobic response: physiology, behavior, and cognition (Davis & Ollendick, 2005).

In OST, the therapist regularly calls attention to the client's subjective ratings of distress, physical sensations, and thoughts by continuously asking the patient to report these aloud. This allows both the therapist and client to track changes in these three response systems. These verbal responses by the client then give feedback to the therapist to stay with the client (giving physical or verbal reinforcement, continuing participant modeling) or that the therapist can sit back and let the client experience the moment on his or her own, furthering the gains made on each successive exposure step.

EXTINCTION, HABITUATION, AND MASSED EXPOSURE

In addition to these techniques, there is a component to OST that is unique: a massed, single session of exposure. To understand the effects of a massed session, it is useful to examine the research on the effects of habituation and extinction. First, it is important to acknowledge the difference between the two processes and their contributions to fear reduction. Habituation is the decrease of a defensive

response which occurs after repeated presentations of a stimulus (Marks & Tobena, 1990). Habituation, as it occurs in therapy, is the reduction in intensity of innate defensive reactions after repeated exposures (i.e., with repeated or prolonged exposure, the magnitude of defensive orienting, autonomic symptoms, and subjective fear decreases).

Historically, extinction was described as a process during which the repeated introduction of the conditioned stimulus occurred without presentation of the unconditioned stimulus; hence, new learning suggested the conditioned stimulus had ceased to predict the unconditioned stimulus in the same context (Marks & Tobena, 1990). Bouton (2002, 2004), however, suggests that the extinction process promotes new inhibitory learning which is context-dependent rather than the unlearning of conditioned relationships. This phenomena is evidenced by the return of fear, reinstatement of the response, or spontaneous recovery of the extinguished response, suggesting that the original response is left intact (Bouton, Westbrook, Corcoran, & Maren, 2006; Hermans, Craske, Mineka, & Lovibond, 2006). In therapy, extinction occurs during exposure when new inhibitory learning occurs in a controlled, structured treatment environment such that the dominant response in that context is approach. Additional inhibitory learning suppresses avoidance; however, the learned anxiety response remains intact. Consequently, a key consideration with exposure therapy is treatment generalization and self-exposure homework/maintenance as clients frequently continue to exhibit varying degrees of fear and avoidance outside of the specific treatment context.

As defined, both processes are generally present during an exposure session (i.e., habituation of defensive reactions and the extinction of conditioned responses). Research on context-dependent extinction in adults undergoing treatment is equivocal. Rodriguez, Craske, Mineka, and Hladek (1999) and Mineka, Mystkowski, Hladek, and Rodriguez (1999) demonstrated context renewal effects at follow-up assessments at 1- to 2-week follow-up assessments, whereas Mystkowski, Craske, and Echiverri (2002) did not find significant context effects on behavioral avoidance tasks (BATs).

Though controversial, the animal and human literatures generally support the superiority of massed extinction and brief inter-trial intervals between habituation trials for reducing responses. For example, Ratner and Gilpin (1974) found that an inter-trial interval of 10 seconds led to quicker habituation in earthworms than an interval of 60 seconds. Walter (1952) found that rats in a T-maze learned to extinguish runs to a previously rewarded goal box more

quickly with massed extinction than spaced extinction. In humans, Sanes and Ison (1983) found that habituation of the eyeblink reflex was enhanced as the interpulse interval of stimulation was reduced. Corty and Coon (1995) found that massed extinction (i.e., trials every 15 seconds) extinguished a salivary response to a lemon quicker than spaced extinction (i.e., trials every 5 minutes).

Given these results, it is not surprising that Chaplin and Levine (1981) found similar effects with exposure therapy for clients with public speaking anxiety. In this study, 48 college students were divided into either an interrupted exposure group (i.e., having a 10-minute interval between two trials) or a continuous exposure group (i.e., no interruption) and treated with flooding procedures. The continuous exposure group performed better than the interrupted exposure group as measured by observer ratings of anxiety and participant ratings of confidence. A study investigating massed versus spaced treatment for agoraphobia also supported the superiority of massed sessions. Foa, Jameson, Turner, and Payne (1980) found that 10 daily 2 1/2 hour exposure sessions were superior to 10 weekly sessions in treating adult agoraphobics. However, Chambless (1990) demonstrated that there was little difference between massed versus spaced exposure in the treatment of individuals with agoraphobia or simple phobia in terms of treatment outcome, treatment dropout, or relapse rates.

An investigation by Rowe and Craske (1998) suggested that massed exposure (defined as four, 7-minute sessions resembling BATs and conducted by undergraduate students) was superior to spaced exposure (the same 7-minute exposure procedures conducted across five sessions) at alleviating fear. The spaced exposure, however, was associated with lasting improvement, whereas participants in the massed exposure condition did not maintain improvements at 1-month follow-up. Importantly, however, the sessions were not conducted by trained clinicians, and no attempt to impart lasting therapeutic skills was attempted. Subsequently, a follow-up study by Lang and Craske (2000) failed to replicate the long-term superiority of spaced sessions when procedures more closely resembled a treatment rather than a BAT. In children, Davis, Rosenthal, and Kelley (1981) found a 3-hour massed exposure session using actual in vivo stimuli (i.e., real spiders as opposed to toys) was superior to 3 hours of the same treatment spaced over three consecutive weeks.

Taken as a whole, the literature can be interpreted as supporting a massed approach or minimizing the intervals between exposures (Chaplin & Levine, 1981; Davis, in press; Foa et al., 1980; Lang & Craske, 2000), or at the very least interpreted as offering no support for needlessly spacing sessions

(Chambless, 1990; Herbert, Rheingold, Gaudiano, & Myers, 2004; Lang & Craske, 2000). A review by Marks and Tobena (1990) concluded that the “response decrement is usually quicker to prolonged presentations within sessions [and to] prolonged sessions” (p. 379). This suggestion would seem to be consistent with the literature. As a result, a logical extension of these studies is that a massed session offers an additional mechanism of change that is uniquely exploited by OST. OST procedures attempt to maximally habituate defensive reactions and extinguish conditioned responses.

THERAPIST BEHAVIORS

Breitholtz and Öst (1997) examined therapist behaviors that affect client outcome in OST. The authors note that the therapist behaviors used most frequently differ between individual treatment and group treatment. Therapists in individual settings are more likely to display behaviors such as reality testing, feedback, and empathy, whereas in group treatment, physical contact and determination (i.e., consistency and clarity of set goals) are used more often. Additionally, Breitholtz and Öst (1997) reported that treatment outcome was predicted by specific therapist behaviors. On a BAT, physical contact from the therapist predicted a positive outcome, whereas instruction and assurance negatively predicted outcome. Physical contact by the therapist is an integral part of the reinforcement and participant modeling components of OST and can include such behaviors as reassuring or reinforcing pats on the back and hand-over-hand guidance or prompting. On a specific self-report measure, education and physical contact predicted positive outcomes; however, consistency and clarity of goals and instruction negatively predicted client outcome following treatment. In contrast to these results, Hellström and Öst (1996) did not find that specific client characteristics predicted treatment outcome in a cross-validation study.

Treatment Progression and the Inclusion of Therapeutic Components

ASSESSMENT

OST begins with the therapist conducting a separate, functional analysis interview prior to the first session of treatment (see Davis, *in press*; Ollendick, Davis, & Muris, 2004; Öst & Ollendick, 2001, for a detailed description). This 1-hour cognitive-behavioral assessment includes the identification of individual etiological and maintaining factors. The interview involves a detailed dissection and cataloging of catastrophic cognitions, avoidant response patterns, anxiety reactions, and conditioning expe-

riences. The individual fear hierarchy is developed during this phase of the assessment as well. Taken together, this information allows for the planning of the complex, graduated treatment session. Öst (1989, 1997) suggested this interview can be completed in 1 hour by a skilled therapist. Additionally, BATs can be conducted to obtain an objective measure of client avoidance behavior, subjective distress, and psychophysiology.

PRESENTATION OF TREATMENT RATIONALE

This session also provides the therapist an opportunity to explain the rationale and instructions for treatment. OST begins with the individualized presentation of the treatment rationale, referring back to the hypothesized development of the phobia, if possible, but emphasizing any identified maintaining factors. The focus of the treatment rationale is on the factors maintaining the phobia, since the hypothesized development of the phobia is difficult to ascertain. The therapist explains that the purpose of the treatment is to “expose the client to the phobic situation in a controlled way, and enable him/her to stay in the situation until realizing that the feared consequence does not occur” (Öst, 1989, p. 3).

Therapists conducting OST work to ensure client understanding that OST is a collaborative process: the therapist and client will work together to progress through the identified steps of the fear hierarchy. Therapists inform clients that the massed session is only the start of their treatment and that they must continue to expose themselves to feared stimuli in their everyday lives for months to maintain and stabilize treatment gains. Öst (1989) suggests that clients must follow a general principle of confronting the phobic stimulus if the chance arises in the natural environment. To maintain treatment results, clients are encouraged to not avoid or escape interaction with the feared stimulus in future instances. Other information provided to clients includes the role of the therapist, that the therapist will not progress up the hierarchy without permission from the client, and that the therapist will continually describe to the clients what is taking place in the session and encourage them to challenge catastrophic cognitions and draw their own rational conclusions. The client should also understand that even though the steps in the hierarchy will produce anxiety, the client's anxiety will not exceed his or her own worst experiences (Öst, 1989, 1997). As a result, OST is a therapy that requires an adequately motivated participant who will be asked to tolerate a moderate amount of distress during the session and not attempt to escape or avoid interaction with the phobic stimulus as a result (Öst, 1989).

IN VIVO EXPOSURE

In vivo exposure is the basic treatment component of OST. Contrary to typical descriptions, however, exposure is a way to evoke and challenge the client's catastrophic cognitions about the phobic stimulus (Öst, 1997). Exposures are conducted differently than typical in vivo procedures. OST exposure progresses as a series of behavioral experiments. Before commencing with a hierarchical step, a behavioral experiment is suggested by the therapist and then agreed upon by the client. The therapist proceeds by demonstrating the step and then having the client carry out the interaction with the phobic object or situation.

The behavioral experiments have several different functions within OST. First, following the positive interaction with the phobic stimulus and given sufficient time, the client's fear habituates and avoidance behavior extinguishes. Second, the behavioral experiments provide a means for actively eliciting, challenging, and testing catastrophic cognitions. Finally, the experiments serve to prevent avoidance of the phobic stimulus in a safe and controlled situation. Before and during the experiment, the therapist prompts the client for his or her catastrophic cognitions and encourages the client to draw more rational conclusions from the interactions with the stimulus. Following an experiment, a client's success or failure on the task is discussed and the next behavioral experiment results from this discussion.

Clients must commit to remaining exposed to the feared stimulus until their anxiety dissipates; they are requested to refrain from escaping behaviorally or cognitively. As the client's reported level of anxiety decreases, the client is asked to continue his or her approach and interaction with the feared stimuli. OST sessions typically end when a predetermined approach goal is met and the client's subjective distress/anxiety as well as belief in the catastrophic cognition has considerably decreased, ideally to zero. This often involves overlearning: full contact/interaction with the feared stimuli and a level of anxiety which is 50% of the highest reported level. Overlearning in OST is often seen as the participant successfully interacting with the stimulus at levels not expected in the natural environment (i.e., spiders crawling in one's hair, multiple lizards on one's lap). Öst (1989) suggested that the therapist's goal during the treatment is to allow as much overlearning to occur as is possible, in that participants are encouraged to go beyond the goal of reaching normal, nonphobic interaction with the stimulus. In this way, the session allows for habituation and extinction to occur to potent and evocative presentations of the stimulus while also modeling and encouraging coping.

PARTICIPANT MODELING

As stated above, OST also relies upon participant modeling (PM) techniques. Although it is commonly believed that PM only occurs with animal stimuli, PM can easily be used to model appropriate interactions and coping with situational and environmental fears as well (Davis and Ollendick, 2005; Ollendick et al., 2004; Öst, 1989, 1997; Öst & Ollendick, 2001; Öst, Svensson et al., 2001). For example, a therapist may demonstrate how to call an elevator and get in it, followed by verbal instructions and physical contact with the client (e.g., placing hand on shoulder) while the client initially attempts the step of entering the elevator. PM is used to structure behavioral experiments into incremental steps. The use of PM not only provides additional structure to the therapeutic setting, but also has the effect of creating an additional hierarchy within each hierarchical step, making the task more gradual (e.g., taking the larger task of touching a dog and breaking it into placing a hand on top of the therapist's hand while he touches the dog, then slowly moving the client's hand closer; see description below). Skill-building is also another important aspect of the PM technique. Phobic clients may lack the basic skills, or at least do not have mastery of them, necessary for interacting with the stimuli they fear. For example, a dog phobic may not know how to approach and touch a dog in a manner that is not threatening to the animal. PM techniques incorporate this added benefit in addition to graduating the level of exposure. Finally, PM also imparts cognitive benefit by using a modified version of self-instructional training. During PM, the therapist models coping statements and encourages the client to verbalize the same (although it should be noted there is not an overt attempt to fade the verbalizations to internalized dialogue as is the case in self-instruction training).

PM is one component of OST which enables the therapist to create a supportive environment in which to disprove false beliefs held by the client. In PM, the therapist demonstrates the desired interaction with the stimulus while the client observes the interaction and outcomes. The client increases his or her physical contact with the stimulus using the therapist as an extension of him- or herself. For example, a client with a phobia of dogs may first observe the therapist interacting with the dog (stimulus) from across the room. Subsequent steps may include the client placing a hand on the therapist's back while the therapist interacts with the dog, followed by client hand over therapist hand. In addition to modeling, the therapist provides a running commentary of interactions with the stimulus and proposes different behavioral experiments that could be modeled. The

therapist verbally as well as physically instructs the client in how to appropriately interact with the stimulus or object. Through PM, the client views, approximates, and engages in behavioral experiences with feared stimuli which either do not lead to the predicted or feared aversive consequences (i.e., fail to confirm event) or do but do not lead to the extremes of catastrophic severity the client believed existed (i.e., fail to confirm severity of event).

REINFORCEMENT

Though not specifically mentioned in either seminal work on OST (i.e., Öst, 1989, 1997), verbal and physical reinforcement is a key component for shaping appropriate approximations of modeled behavior and for rewarding the successful completion of hierarchy steps and has received attention in subsequent descriptions of OST (cf. Öst and Ollendick, 2001). Reinforcement refers to the use of operant techniques during the client's exposure to the feared stimuli. The therapist provides the client with verbal feedback during exposure to the feared stimuli and reinforces the client for continuing exposure without avoidance behaviors. Öst's emphasis on the use of verbal praise and rewarding physical contact (e.g., a pat on the back) is also demonstrated in his instruction and ratings of therapists he supervises (Öst & Ollendick, 2001) and detailed in a systematic examination of therapist behaviors during OST (Breitholtz & Öst, 1997). Therapist behaviors are evaluated on a scale that includes a rating of the adequacy of the therapist's use of praise and feedback. As a result, it becomes clear that OST includes the use of reinforcement techniques and aspects of CBT (i.e., skill-building and testing catastrophic cognitions) in addition to the in vivo exposure and modeling components endorsed by Öst (1989, 1997). Thus, OST purportedly incorporates several well-established and probably efficacious treatments into one therapy. Differential reinforcement procedures are also incorporated during OST as client fear expressions are generally responded to neutrally whereas approach is reinforced. As a result, clients do not receive undue attention, tangible reinforcement, or escape from task demands by displaying fearful behavior.

VIDEO RECORDING

Öst (1989) originally suggested that, due to the short duration of the treatment and the large gains a client may make during a session, the client often feels that the experiences did not happen or doubts his or her ability to behave/interact in a nonfearful way. He suggested providing the client with videotaped segments or photographs of the session to refer to

following treatment to allow for confirmation of their progression.

MAINTENANCE

OST is seen as the start of treatment. Despite the "one-session" implied by its name, maintenance and continued exposure are used to continue the client's exposure to the phobic stimulus in everyday life and promote treatment generalization. Maintenance tasks include a commitment to not allowing oneself to escape or avoid interactions with the feared object or situation. Often, therapists provide more specific maintenance tasks such as frequently visiting a neighbor's dog, providing spiders to take home, or recommending trips to skyscrapers. To date, no studies have examined the role of therapist-directed practice and maintenance/continued exposure in the maintenance of treatment gains. Additionally, little is known regarding the extent to which participants follow through and carry out assigned tasks such as continued exposure. These issues warrant further examination.

Review of the Empirical Status of OST

In this review, all empirical articles employing OST as outlined by Öst (1989) in the treatment of specific phobias are reviewed and discussed. Articles were identified through a PsycInfo literature search using the terms "one-session treatment" and "specific phobia," as well as combinations of the terms "rapid treatment" and "brief treatment." In addition, a citation search was conducted to identify articles referencing Öst (1989, 1997) as possible targets for inclusion. According to EST guidelines (described below; see Table 1; Chambless et al., 1996), a study must sufficiently specify its treatment approach to be included. As a result, studies not specifically employing OST or only making vague reference to using massed exposure techniques (but presumably not OST) were not included.

As a result, 21 separate studies were identified and included in this review as having either a direct reference to Öst's treatment procedures or a description sufficient to conclude that OST was specifically used. Additionally, studies reviewed for EST status employed random assignment of research participants to treatment and/or control conditions. Additionally, one seminal case study and two studies utilizing single-subject methodology are reviewed. In addition, this review is separated by phobic stimulus (e.g., spider, dog, flying) and further by adult or child participants and group or individual sessions (see Tables 2, 3, and 4). EST status is reviewed to determine support according to Task Force criteria; however, uncontrolled Cohen's *d* effect sizes are also presented and discussed ($\text{mean}_1 - \text{mean}_2/\text{pooled}$

Table 1
Criteria for Empirically Validated Treatments (adapted from
Chambless et al., 1996)

Well-Established Treatment

- I. For well-established treatment status, there must be at least two good experiments using between group designs which either demonstrates
- A. A treatment's statistical superiority to a pill, psychological placebo, or another treatment
 - B. A treatment's equivalence to another well-established treatment in an adequately powered experiment (i.e., at least 30 per group per Kazdin & Bass, 1989).
- OR
- II. More than nine single-case design studies that have also
- A. Used appropriate and acceptable single-subject design and procedures and
 - B. Included comparisons to treatments similar to criterion IA above.
- FURTHER CRITERIA FOR BOTH I AND II:
- III. Treatment manuals must be used or reasonably detailed descriptions of the treatment process.
- IV. Participant characteristics must be specified in detail.
- V. At least two different researchers or research teams must demonstrate the treatment's effects.

Probably Efficacious Treatments

- I. For probably efficacious status, there must be at least two good experiments demonstrating a treatment's statistical superiority to a wait-list control group.
- OR
- II. One or more experiments meeting the Well-Established Treatment Criteria IA or IB, III, and IV, but not V.
- OR
- III. More than three single-case design studies which otherwise meet the preceding well-established criteria.
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standard deviation; see Tables 2, 3, and 4) to allow for examinations of uncontrolled (within-group) effects (controlled, between-groups, comparisons to OST are also included in the tables). Finally, studies that were determined to be inappropriate for determination of EST status were included in a subsequent section. These studies were not used to evaluate treatment efficacy as they failed to meet current EST guidelines (see Table 1; Chambless et al., 1996), e.g., no treatment differences with small sample sizes (i.e., inadequate power to detect effects when differences are not observed between OST and an alternative treatment; less than 30 participants per group; cf. Kazdin & Bass, 1989), inappropriate research designs (e.g., unacceptable single-subject design), or comparison of the treatment to the treatment plus a minor variant (e.g., no differences detected between OST and essentially OST with a very minor adaptation; i.e., essentially comparing the treatment to itself).

Generally, studies of OST have been conducted with specific stimuli (i.e., only participants phobic of spiders) and have typically employed at least two active treatment groups (OST and a comparison) with three studies comparing OST to a wait-list control condition (two adult, one child). Overall, treatment

methodology varied greatly across studies by including multiple forms of administration (e.g., group exposure; see Table 2) and a variety of dependent variables. The behavioral response component was most often assessed through BATs, though the physiological response component was measured at times through objective measures such as heart rate and blood pressure. Studies used a variety of methods to assess the subjective experience of anxiety, such as standardized measures (Fear Survey Schedule), subjective units of distress ratings (SUDs), and other self-report measures. A number of studies tapped the cognitive component as well, utilizing measures of catastrophic cognitions, automatic thoughts, or self-efficacy. In many instances, dependent variables for each study were specific to the phobia of concern (e.g., Spider Phobia Questionnaire). All 13 of the controlled studies reviewed for determination of EST status included a BAT as a dependent variable. All studies utilized a measure of subjective anxiety (i.e., self-report or SUDs), although instruments varied across studies and were often only briefly described. Many studies referred to "clinically significant change" as a treatment outcome. Jacobson, Follette, and Revenstorff (1984) specify clinically significant change as statistically reliable change, pre- to posttreatment, with posttreatment functioning falling within the range of a normal group or outside the range of a client group (in the direction of functionality).

SPIDER PHOBIA

OST was compared to a manual-based self-exposure treatment for groups of spider phobics by Öst, Salkovskis, et al. (1991). At posttreatment and a 1-year follow-up, the participants in the OST group showed significant improvements on self-report and behavioral measures as well as on clinician ratings. The majority of participants in the OST group experienced significant improvement at posttreatment and follow-up (large effect size, Cohen's *d*; see Table 2).

Hellström and Öst (1995) compared OST of spider phobia to four different types of manual-based therapy: specific manual-based treatment in the home, specific manual-based treatment in the clinic, general manual-based treatment in the home, and general manual-based treatment in the clinic. Participants were 52 spider phobics. The specific manualized treatment was based on the description of OST given by Öst (1989) and was used in an earlier study (Öst, Fellenius, et al., 1991, Öst, Salkovskis, et al., 1991). The general manual-based treatment used was a Swedish translation of the manual included in Marks (1978). OST was found to be significantly more effective than the two general manual therapies and to the specific, clinic-based manual treatment,

Table 2
Individually Administered One-Session Treatment With Adults

Author(s)/year	Phobic object	Condition(s)	N	Mean session length	Controlled effect size (Cohen's <i>d</i>) for OST	Uncontrolled effect size (Cohen's <i>d</i>)	
Öst, Salkovskis, et al. (1991)	Spider	OST therapist directed	17	126.2 min			
		SPQ			–	3.05	
Hellström and Öst (1995)	Spider	SUDS			–	3.80	
		Self directed exposure	17	282.8 min			
		SPQ			1.55	1.22	
		SUDS			1.80	0.95	
		OST therapist directed	10	Not reported			
		SPQ			–	2.84	
		SUDS			–	3.79	
		Specific manual-home	10				
		SPQ			1.42	1.60	
		SUDS			1.18	1.37	
Thorpe and Salkovskis (1997)	Spider	Specific manual-clinic	11				
		SPQ			1.09	1.37	
		SUDS			0.99	1.85	
		General manual-home	11				
		SPQ			1.35	1.77	
		SUDS			1.07	2.23	
		General manual-clinic	10				
		SPQ			1.49	1.62	
		SUDS			1.28	1.74	
		OST	13	Not reported		NA	NA
Wait List Control	12			NA	NA		
Koch, Spates, and Himle (2004)	Small animals	Behavioral Treatment	10	99.85 min (across all treatments)			
		SPQ			0.44	1.17	
		SUDs			0.33	1.74	
		BAT			0.92	6.3	
		Behavioral Treatment + generalization	10				
		SPQ			0.67	0.69	
		SUDs			0.45	0.92	
		BAT			0.20	2.14	
		CBT (OST)	10				
		SPQ			–	1.49	
SUDs			–	1.22			
BAT			–	2.53			
Öst (1987)	Multiple (animal type)	CBT (OST) + generalization	10				
		SPQ			0.12	0.60	
		SUDs			0.36	1.42	
		BAT			0.69	4.20	
Öst, Hellström, and Kåver (1992)	Injection	OST	1	Cat- 75 min. Snake- 120 min Rat- 45 min. Worm- 40 min		Single subject design	
		IPS- Anxiety	20	120 min		–	1.85
		IPS- Avoidance				–	1.85

Table 2 (continued)

Author(s)/year	Phobic object	Condition(s)	N	Mean session length	Controlled effect size (Cohen's <i>d</i>) for OST	Uncontrolled effect size (Cohen's <i>d</i>)
Öst, Hellström, and Kåver (1992)		5 sessions exposure	20	212 min		
		IPS- Anxiety			0.46	3.23
Öst, Alm, et al. (2001)	Claustrophobia	OST	10	180 min		
		SUDS: elevator			–	1.29
		SUDS: small room			–	1.74
		SUDS: gas mask			–	0.79
		Claustrophobia Questionnaire	–	0.91		
		5 sessions exposure	11	300 min		
		SUDS: elevator			0.29	1.18
		SUDS: small room			0.00	1.69
		SUDS: gas mask			0.34	1.19
		Claustrophobia Questionnaire	0.01	1.19		
		5 sessions cognitive therapy	11	300 min		
		SUDS: elevator			0.51	0.81
SUDS: small room	0.11	1.16				
SUDS: gas mask	0.32	0.98				
Claustrophobia Questionnaire	0.22	1.28				
Wait list Control	18					
SUDS: elevator			NA *	0.17		
SUDS: small room			NA	0.09		
SUDS: gas mask			NA	0.34		
Claustrophobia Questionnaire	NA	0.20				
Öst, Brandberg, et al. (1997)	Flying	OST	14	180 min		
		Fear of Flying Inventory			–	1.41
		Fear of Flying Scale	–	2.30		
		5 sessions exposure	14	360 min		
		Fear of Flying Inventory			0.18	1.52
		Fear of Flying Scale			0.02	1.59

Note. CBT=Cognitive Behavioral Therapy; OST=One-Session Treatment; SPQ=Spider Phobia Questionnaire, SUDS=Subjective Units of Distress; IPS=Injection Phobia Scale; BAT=Behavioral Avoidance Task; NA=Not Available.

* Comparison for wait list control condition was all treatment groups combined.

controlled effect sizes (Cohen's *d*) ranging from 0.99 to 1.49. Significant gains were shown for the OST group on subjective distress during a BAT ($d=3.79$), self-report measures ($d=2.85$), and clinician ratings of the phobia. Group differences were not evident on measures of physiological responding, although improvement was found on these measures at post-treatment assessments for all participants (see Table 2 for controlled effect sizes).

The effect of OST on avoidance and phobic beliefs was examined by Thorpe and Salkovskis (1997). Twenty-five spider phobics completed a BAT and self-report measures of cognition and

subjective fear prior to and after participation in OST. A significant difference was found between the treated and nontreated spider phobics on the BAT as well as self-reported fear, avoidance, and interference due to their fear. Overall, Thorpe and Salkovskis (1997) found that OST, as compared to a wait-list control, significantly improved spider phobics' negative beliefs regarding spiders and their own phobic responses.

Öst, Ferebee, et al. (1997) compared three variations of group-administered OST for spider phobia. All participants met criteria for *Diagnostic and Statistical Manual of Mental Disorders* (DSM-

Table 3
Group Administered One-Session Treatment With Adults

Author(s)/year	Phobic object	Condition(s)	N	Mean session length	Controlled effect size (Cohen's <i>d</i>) for OST	Uncontrolled effect size (Cohen's <i>d</i>)				
Öst, Ferebee, et al. (1997)	Spider	Direct group OST	16	207 min	–	2.71				
		SPQ				–	2.24			
		SUDs	16	128 min	1.50	1.12				
		Direct observation					0.76	1.75		
		SPQ					16	128 min	0.41	1.19
		SUDs							0.74	1.49
Indirect (video) group observation	14	Approx 120 min	–	–	1.40					
ACQ					–	2.16				
BSQ					–	4.74				
Self-efficacy		13	Approx 120 min	NA *	1.33					
Direct group observation						NA	2.19			
ACQ						NA	2.51			
Götestam (2002)	Spider	Direct group OST	11	Approx 120 min	NA	2.31				
		ACQ				NA	1.48			
		BSQ				NA	1.50			
		Self-efficacy	13	Approx 120 min	NA *	1.33				
		Direct group observation					NA	2.19		
		ACQ					NA	2.51		
Indirect (video) group observation	11	Approx 120 min	NA	2.31						
ACQ					NA	1.48				
BSQ					NA	1.50				

Note. OST=One Session Treatment; SPQ=Spider Phobia Questionnaire; SUDs=Subjective Units of Distress; ACQ=Agoraphobic Cognitions Questionnaire; BSQ=Body Sensations Questionnaire; NA=Not available.

* Controlled effect sizes reported by Götestam (2002), no means/standard deviations provided.

IV; American Psychiatric Association, 2000) spider phobia. The treatment groups included direct treatment, direct observation, and indirect observation. The key difference between the treatment groups was that the two observation groups (direct and indirect) did not have interaction with the actual phobic stimulus, whereas the direct treatment group did. Significantly greater improvements were evident on subjective ratings (SUDs) and self-efficacy ratings during the BAT and assessor ratings of phobia severity for the direct treatment group than the direct observation or indirect observation groups (see Table 3 for controlled effect sizes). No differences were found between the treatment groups on physiology, behavioral measures, or self-report measures of fear, although significant improvements were observed at posttreatment assessment sessions for all groups. Significant improvement was reported for 75% of participants in the direct treatment group at posttreatment (large effect size; see Table 3).

Götestam (2002) evaluated three group treatments for 38 individuals with spider phobia: direct exposure (i.e., OST), indirect exposure, and video modeling. No significant group differences emerged, although significant effects were found at posttreatment on self-report measures of cognitions, body sensations, and self-efficacy for all groups. Götestam (2002) failed to replicate the

significant results found by Öst, Brandberg, and Alm (1997) and Ost, Ferebee, et al. (1997).

SMALL ANIMALS

Koch et al. (2004) compared 1 session of behavioral exposure to 1 session of CBT for the treatment of small animal phobias in a sample of 40 adults and included programmed generalization and maintenance components. Participants either met criteria for a full diagnosis of specific phobia or partial criteria for specific phobia (i.e., did not report significant interference or marked distress). The authors reported that the CBT condition loosely followed the procedures outlined by Öst (1997). The two treatments produced significant improvements on measures of behavior and subjective fear, uncontrolled effect sizes (*d*) for the OST group ranged 1.22 to 2.53. Programmed generalization did not improve outcomes for either treatment. Participants in the OST condition rated the intervention as less intrusive than participants in the behavioral exposure. Overall, Koch et al. did not find a significant difference between the two groups (see Table 2 for controlled and uncontrolled effect sizes).

In a multiple baseline across phobias, Öst (1987) treated an adult woman with specific phobias of cats, snakes, rats, and worms using OST. Results suggested that OST was effective in reducing the

Table 4
One-Session Treatment With Children

Author(s)/year	Phobic object	Condition(s)	N	Mean session length	Controlled effect size (Cohen's <i>d</i>) for OST	Uncontrolled effect size (Cohen's <i>d</i>)
Muris, Merckelbach, van Haften, and Mayer (1997)	Spider	EMDR	22	90 min	0.52	3.42
		SPQ				
		SUDS				
		BAT				
		OST (Cross-over design)	90 min	–	–	
		SPQ				
		SUDS				
Muris, Merckelbach, Holdrinet, and Sijtsenaar (1998)	Spider	EMDR	9	90 min	1.12	0.67
		SPQ				
		SUDS				
		BAT	9	150 +90 min	0.82	0.41
		OST				
		SPQ				
		SUDS				
Öst, Svensson, et al., (2001)	Various specific phobias	BAT	8	150 min	–	1.18
		Computerized exposure				
		SPQ				
		SPQ	21	None reported	1.22	0.42
		SUDS				
		BAT				
		OST parent present	20	–	–	–
FSSC-R						
RCMAS						
Wait List	19	0.26	0.43			
Control						
FSSC-R						
FSSC-R	19	0.25	0.23			
RCMAS						
FSSC-R	19	0.40	0.26			
RCMAS						
					0.05	0.14

Note. EMDR=Eye Movement Desensitization and Reprocessing; OST=One Session Treatment; SPQ=Spider Phobia Questionnaire; SUDS=Subjective Units of Distress; BAT=Behavioral Avoidance Task, FSSC-R=Fear Survey Schedule for Children Revised, RCMAS=Revised Children's Manifest Anxiety Scale.

behavioral avoidance and subjective distress reported by the participant. Clinically meaningful improvements were observed on behavioral avoidance, self-rating of anxiety, and, to a lesser extent, heart rate and blood pressure. Improvements were not noted until the phobia in question was targeted with the treatment; therefore, little generalizability across phobias was observed.

INJECTION PHOBIA

Öst, Hellström, and Kåver (1992) compared OST to five sessions of exposure for the treatment of injection phobias. Forty clients were randomly assigned to either OST or the five sessions of exposure. Both groups improved significantly, with 80% (OST) and 79% (exposure) achieving clinically significant improvement. Both treatments produced improvements in behavioral, physiological, and self-

report (subjective) symptoms. No significant group-by-time interactions were reported.

CLAUSTROPHOBIA

In the one controlled study of OST for claustrophobia (Öst, Alm, Brandberg, & Breitholtz, 2001), 46 participants were randomly assigned to either OST, five sessions of exposure, five sessions of cognitive therapy, or a wait-list control condition. The three active treatments were superior to the wait-list condition, although no significant differences emerged among the three treatments. At posttreatment, 80% of the participants who received the one session of exposure were clinically improved (large uncontrolled effect size, *d*), and 100% were clinically improved at the 1-year follow-up. Overall, each of the active treatment groups evidenced significant improvement.

FLYING PHOBIA

Öst, Brandberg, et al. (1997) compared OST to five sessions of graduated exposure for 28 clients with fears of flying. According to self-ratings of anxiety and responses to standardized questionnaires, the single 3-hour session and five sessions (6 hours) of graduated exposure produced similar improvements at posttreatment assessment and 1-year follow-up (large uncontrolled effect size, *d*). See Table 2 for effect sizes.

SUMMARY OF OUTCOMES FOR OST WITH ADULTS

In an examination of pre- to posttreatment differences for all reported studies evaluating OST for the treatment of specific phobias, OST in adults led to a significant decrease in reported SUDs during BATs (mean *d*=2.20, range 0.79 to 3.80) and a reduction in scores on self-report measures of fear (i.e., Fear Survey Schedule, Spider Phobia Questionnaire) (mean *d*=1.98, range 0.91 to 3.05). Overall, examination of effect sizes suggest that large effect sizes were found between pre- and posttreatment assessments, suggesting improvement across various components of the anxiety response (see Tables 2 and 3 for further description of effect sizes).

OST WITH CHILDREN

In a crossover study, Muris, Merckelbach, Van Haften, and Mayer (1997) examined eye movement desensitization and reprocessing (EMDR) and OST for the treatment of spider phobia in children. Half of the participants received 1.5 hours of EMDR and the other half received 1.5 hours of in vivo exposure as described by Öst (1989). Results suggested that OST was more effective than EMDR in reducing behavioral avoidance. Neither OST nor EMDR produced significant improvement in measures of physiological responding. See Table 4 for description of effect sizes.

Muris, Merckelbach, Holdrinet, and Sijsenaar (1998) examined OST for spider phobic children in comparison to EMDR and a computerized exposure placebo. OST was superior to EMDR on two of the affective measures (i.e., child self-report and subjective fear during the BAT). However, OST was not significantly different from EMDR on the behavioral measure (i.e., BAT). The computerized exposure placebo produced relatively smaller effects. See Table 4 for controlled effect sizes.

Öst, Svensson et al. (2001) randomly assigned children with various specific phobias to either (a) OST alone, (b) OST with a parent present, or (c) a 4-week wait-list control. The parent present condition varied greatly and deviated significantly from traditional child-alone OST as the parent was allowed to serve as an observer, a model, and/or

allowed to interact with and comfort the child throughout the entire session. This adaptation differs from studies reviewed in a subsequent section below by including the alteration throughout the treatment and by making a significant adaptation to procedures (e.g., parental comforting, additional modeling, parental interactions). Results of this study suggested greater improvement for children assigned to either OST treatment group on behavioral measures following inclusion of the wait-list participants; however, significant group effects were not present on measures of physiological functioning. Children participating in OST alone and with a parent present reported more improvement on self-report measures of fear and anxiety at both posttreatment and 1-year follow-up. No difference was reported between the treatment groups in terms of physiological responding (i.e., blood pressure and heart rate).

In an examination of pre- to posttreatment differences, OST for children leads to significant increases in the number of steps completed during BATs (mean *d*=1.40, range 1.18 to 1.61), a significant decrease in reported SUDs during BATs (mean *d*=1.91, range 1.87 to 1.96), and a reduction in scores on self-report measures of fear (i.e., Fear Survey Schedule for Children-Revised, Spider Phobia Questionnaire; mean *d*=1.43, range 0.17 to 2.35). Overall, large effect sizes are observed when examining pre- to posttreatment changes following the application of OST for the treatment of specific phobias in children (see Table 4 for further description of effect sizes).

STUDIES NOT APPROPRIATE FOR DETERMINATION OF EST STATUS

Arntz and Lavy (1993) examined the effects of participant verbal elaboration of spider features during OST on short- and long-term treatment gains. Forty-one female spider phobics participated in one of two in vivo treatment conditions based on OST as described by Öst (1989). In the elaboration condition, participants verbally described objective characteristics of the spider during a 2.5-hour in vivo exposure. They were discouraged from verbal elaboration of spider features in the nonelaboration condition. Verbal elaboration or description of stimuli characteristics did not affect long- or short-term effects of the exposure treatment. This study is inappropriate for determination of EST status because the treatment groups were not sufficiently distinct from each other to be considered separate treatments. In essence, each was an adaptation of OST and results did not differ between groups.

Brosnan and Thorpe (2006) evaluated the effectiveness of a single 1-hour session for the treatment of

technophobia in young adults. The treatment included a 1-hour session, but the authors did not provide sufficient details regarding the treatment except for a reference to a secondary source (i.e., Thorpe & Salkovskis, 1997) to determine actual use of OST procedures. Additionally, the single 1-hour session represents a significant departure from the suggested 3-hour session (Öst, 1989, 1997), and the effects of an additional take-home anxiety treatment book were not controlled. No immediate posttest results were reported, although 10-month follow-up data suggested that treated participants endorsed significant decreases in anxiety as compared to non-treatment participants.

Öst (1996) compared small (four participants) and large (eight participants) group OST for the treatment of spider phobia. The treatment, based on Öst (1989), was carried out in either a small semicircle or large circle. Each participant worked individually with a set of spiders, with the therapist providing demonstration, physical assistance, and reinforcement when needed. Both the small and large group administration of OST yielded significant improvements on behavioral and self-report measures, although improvements were not noted on physiological measures. Results were maintained at 1-year follow-up. Clinically significant improvement was noted in 82% of small-group participants and 70% of large-group participants. The study by Öst (1996) is not appropriate for determination of EST status because the study, in essence, compared OST to OST, not a separate treatment or a wait-list. Overall, no differences were found between the two forms of OST.

Öst, Stridh, and Wolf (1998) examined the effects of four consecutive interventions for the treatment of spider phobia. The treatment conditions included a self-help treatment manual, video observation, therapist-directed group treatment, and individual treatment. Participants who did not display clinically significant improvement in phobic symptoms following one intervention were offered the next, more involved treatment. Each consecutive treatment required more therapist time and therapist-participant interaction than the previously administered treatment (i.e., self-help manual to video observation of individual treatment, group treatment to individual treatment). Of the 38 participants who completed the group treatment based on Öst (1989), 26 (68%) demonstrated clinically significant improvement. Each of the 12 participants who did not achieve clinically significant improvement following the group intervention did so after the individual application of OST. This study is not included in the determination of EST status because it did not randomly allocate participants to

treatment conditions and had insufficient sample sizes.

Antony, McCabe, Leeuw, Sano, and Swinson (2001) examined the addition of a distraction component to an OST package for the treatment of spider phobia. Sixty individuals with specific phobia of spiders were randomly assigned to either focused or distracted OST. In the focused OST, participants received 2 hours of OST based on procedures described by Öst (1989) and Antony, Craske, and Barlow (1995). In the distracted OST condition, participants received an initial 60 minutes of OST while listening to an educational audiocassette. Following this condition, participants received an hour of OST as traditionally applied. Both the focused and distracted OST participants evinced significant improvements on measures of heart rate, subjective fear, and avoidance behavior. No differences between the two groups were revealed. Again, this study was not appropriate for determination of EST status due to considerable similarities between the two treatment conditions.

de Jong et al. (2000) compared 3 hours of traditional OST (Öst, 1989) to 2.5 hours of OST plus 30 minutes of counterconditioning, wherein the phobic stimulus (i.e., spider) was paired with preferred food items and music. Additionally, participants in both groups were given maintenance exercises, including instructions and materials to continue exposure in their natural environment. Both treatments resulted in significant decreases in avoidance behavior and self-reported fears, although differences between the groups were not evident on these measures.

An adaptation of group-administered OST, rotating active exposure, was evaluated by Götestam and Hokstad (2002). Twenty spider phobics participated in an experimental "Rotating Active Exposure" model in which six to eight participants observed/participated in two to three rounds of modeling, observation, and or direct contact with spiders. Five spider phobic participants were assigned to a wait-list control group. Significant effects were found on all measures, including measures of anxious cognitions, somatic symptoms, and self-efficacy. This study was excluded from the determination of the EST status of OST for procedural reasons. Random assignment of participants to groups was not specified, and participants were recruited at two separate times two years apart; additionally, group sizes were greatly unequal.

Davis, Kurtz, Gardner, and Carman (2007) examined the effects of OST on a developmentally delayed child with severe behavior (i.e., self-injury, aggression, disruption) in a single-subject multiple-baseline across water and height phobias design. OST

had a substantial impact on both phobias by reducing the intensity of subjective fear (e.g., FSSC-R), improving BAT performance, and reducing negative verbalizations and increasing positive verbalizations during BATs consistent with the introduction of treatment of each phobia. This case study also demonstrated that OST could be successfully implemented even when mild developmental delays and severe behavior were present. Even so, this case study by itself does not contribute to probably efficacious or well-established treatment status (i.e., at least 3 or more case studies are needed and the multiple baseline was only across two conditions; see Table 1).

SUMMARY OF CONTROLLED STUDIES AND EMPIRICAL STATUS

OST, or an adaptation, has been examined in several empirical studies. At least seven randomized clinical trials by Öst and colleagues support the efficacy of OST in alleviating symptoms associated with spider phobias, small animal phobias, flying phobia, and claustrophobia in adults. OST for adults merits probably efficacious status as it has been demonstrated to be superior to self-exposure (Öst, Salkovskis, et al., 1991), modeling (Öst, Ferebee, et al., 1997), two types of manualized treatment (Hellström and Öst, 1995), and a wait-list control group (Thorpe and Salkovskis, 1997) for spider phobia. Well-established criteria were not met as OST's superiority to another treatment or psychological placebo or OST's equivalence to an already established EST in an adequately powered trial by independent investigators has not been demonstrated. Although many studies reviewed herein do report equivalence of OST to other interventions, sample sizes were not large enough to ensure sufficient power to detect differences (cf. Kazdin and Bass, 1989). These studies add additional information regarding the usefulness and success of OST in treating specific phobias, but due to power limitations, they are not appropriate for inclusion in the evaluation of EST status. Additionally, OST has been shown to be probably efficacious when used in a group setting (Öst, 1996).

Another difficulty with the reviewed literature is the absence of control conditions in many of the studies. Of the nine group design studies reviewed for adults, only two included a control condition. In many of the studies presented, the OST treatment condition yielded results equivalent to other psychological interventions. With no differences evident between conditions and the absence of a control condition, a lack of experimental control and a multitude of external threats to validity may be responsible for client improvements (i.e., time, maturation, history, therapist attention).

Although numerous studies involving adults have been conducted, and by different research teams, these studies have unfortunately failed to find significant differences and lacked adequate power to suggest OST was equivalent (Criterion 1B). Although it is true that a greater quantity of literature examining the efficacy of OST in adults exists, the EST criteria set forth by the Task Force highlight the importance of the quality of research in addition to quantity in the determination of EST status. Consequently, the current review of all available literature with both children and adults indicates that, although a larger number of adult studies have been conducted with positive results, the quality of methodology and resulting findings do not suggest that OST for the treatment of adults can be considered well-established at this point. Although only a handful studies exist in children, the studies demonstrated the degree of scientific rigor necessary for determination of EST status and support the classification of OST for children with specific phobias as probably efficacious as well. At present, two empirical studies conducted by one group of independent researchers have demonstrated OST to be superior to a psychological treatment or placebo, whereas one study has found OST superior to a wait-list. As a result, the use of OST for specific phobias currently merits probably efficacious status with children (cf. Davis, *in press*) and with adults (see Tables 2, 3, and 4 for summaries).

Both individual and group OST for adults garner probably efficacious status (see Tables 2 and 3). The results of these studies suggested that OST, either administered individually or in a group setting, was more effective than no treatment (Öst, Alm, et al., 2001). Two studies suggested that individually administered OST was equal to five sessions of exposure (Öst, Alm, et al., 2001; Öst, Branberg, et al., 1997). Hellström and Öst (1995) reported that therapist-directed OST was more effective than self-administered manual-based exposure. Other studies suggested that group-administered OST was superior to indirect observation of exposure (Öst, Ferebee, et al., 1997). Taken together, OST warrants probably efficacious status for both individual and group treatment of specific phobias in adults due to the limited sample sizes reported in the current research as well as a lack of significant findings in studies comparing OST to other treatments. As an indication, the average sample size in the reported literature on OST is 12.8 for individual treatments, 15 for group, and 16.7 for OST with children.

Discussion

Öst (1985, 1987, 1989, 1997) and Öst and Ollendick (2001) describe OST as an intervention that directs a

therapist to actively target catastrophic cognitions, physiological reactions, subjective anxiety, and behavioral avoidance. In accordance with this description, OST places an equal focus on physiology, behavior, and cognition related to specific phobias in individual clients. Within a bioinformational perspective, OST potentially provides one of the best frameworks for targeting pathological fear networks. By combining well-researched techniques such as exposure, participant modeling, reinforcement, and cognitive challenges during a single massed session, OST is successful at reducing anxiety response intensity. OST produced clinical improvement rates of approximately 85% to 90% in adults (Öst, 1989; Öst, Brandberg, et al., 1997) and close to 90% in children (Öst, Svensson, et al., 2001). In contrast, recovery rates of other treatments for specific phobias have been cited in the range of 75% to 85% (Öst, 1989). Moreover and per expectations, the uncontrolled effect sizes (Cohen's *d*) observed were generally large. Controlled effect sizes tended to be large for comparisons to wait-list, placebo, or self-help conditions, but small to moderate for other forms of active treatment.

The 3-hour OST session has frequently been found equivalent to other treatments that involved only one treatment component (e.g., comparisons to pure exposure or to only cognitive therapy). Notably, the other treatments OST has been compared to in this review have lasted on average 1 to 3 hours longer than the single OST session. Even though these studies were underpowered, it is an important consideration. Essentially, does the incorporation of more treatment components or more overall treatment mean better therapeutic outcome? We would argue no, based on the results of this review. Comparison treatments lasting hours longer than OST were found equivalent to the single OST session, lending tentative support to the hypothesis that massed exposure offers unique benefit, although improvements may follow from different techniques. Additionally, comparisons of OST to OST with very minor variations (e.g., distraction, elaboration, counterconditioning) have not produced statistically significant effects. Child studies comparing OST to EMDR have also suggested OST is superior to this other arguably multicomponent treatment. From this point of view and given the limitations of the studies, it would seem that “more” is not necessarily better (i.e., more than 3 hours, more techniques than those included in traditional OST). Even so, future research should consider comparing OST to other multicomponent treatments (e.g., spaced CBT with reinforced practice procedures incorporated).

Additionally, an important ethical question regarding the use of OST has been the lack of full disclosure

about the treatment process. In particular, Öst (1989) suggested that the therapist's goal during the treatment is to allow as much overlearning to occur as is possible. In this sense, overlearning represents both the client interacting with the feared stimulus repetitiously for mastery, but also to a degree of interaction with the stimulus above and beyond what would be typically expected in the natural environment (e.g., both repeated experiences touching a snake or spider, but also going to the extreme of having a snake wrapped around one's neck or a spider in one's hair). The use of overlearning serves to provide practice with a level of exposure not likely to be experienced frequently outside of the session and allows the client to surpass a typical level of interaction with the stimulus. In this way, the session allows for habituation and extinction to occur to considerably potent and evocative presentations of the stimulus. Clients are assured that treatment takes on a “teamwork approach” wherein behavioral experiments will not be undertaken without the client's permission (Öst, 1997). Öst (1989, 1997) suggested that as many as 90% of his adult clients would not have continued with the treatment or entered into treatment had they known about the goal of overlearning beforehand. Interestingly, these same clients are also reported as having been pleased with the treatment's outcome (Öst, 1989, 1997). Moreover, Öst (1989, 1997) suggested that withholding this final goal of treatment aids clients in completing the therapy successfully, as rumination and anxiety about completing the final step would hinder earlier progress. This issue becomes one of greater developmental and ethical concern with children.

As a result, Svensson, Larsson, and Öst (2002) investigated how children experience OST. Overall, 82.1% of the children interviewed reported satisfaction with the treatment, similar to the 83.9% who considered themselves better after treatment (Svensson et al., 2002). A majority of the children, 75.4%, believed treatment had gone as per their expectations; however, 14% stated that treatment had deviated from their expectations (Svensson et al.). Those children who indicated that treatment had not gone as expected suggested a variety of positive and negative reasons: for example, treatment was more fun than expected, the size of the animal differed, or the time passed more quickly than expected (Svensson et al.). In sum, the treatment benefited most children (i.e., 82%) and positive reviews of the treatment and the overall experience were associated with treatment success (Svensson et al.). It seems that children who benefit from OST largely understand and support the demands of the treatment.

A final consideration should be given to the pragmatic and financial application of OST. As in

the case of OST for the treatment of claustrophobia (Öst, Alm, et al., 2001), OST was found to be equivalent to five sessions of exposure as well as to five sessions of cognitive therapy. While OST did not demonstrate superiority in this study, it may be more cost-effective (180 minutes for OST versus 300 minutes for exposure or cognitive therapy). Shorter treatment duration will also likely result in less disruption of the client's life and schedule; however, the integration of these elongated sessions into third-party reimbursement, 50-minute session, standards is untested. Even so, it may be that the significant overall reduction in billable client contact will prove attractive to such organizations. Along these lines, we are currently conducting a grant-funded study to determine if OST can be delivered in three, 50-minute, spaced sessions with comparable effects.

If three separated sessions are not comparable to the single massed session, then the ethically responsible choice would be to provide a comparable EST until such time as OST can be further disseminated and integrated into the constraints of private practice billing (Ollendick and Davis, 2004). At any rate, an individual case-by-case decision among the myriad ESTs available for specific phobia should likely come down to individual client-therapist choices and recognize the "best fit" for a given client's presentation, motivation, skills, time, and preferences.

In sum, OST seems to be a therapy that provides comprehensive evocation and treatment of physiology, behavior, and cognition. Not only does OST utilize many of the well-established and probably efficacious ESTs (Davis & Ollendick, 2005; Ollendick & King, 1998), it seems to impart benefit beyond the mere sum of its component interventions and seems to combine these elements uniquely (i.e., the addition of other treatment components does not significantly enhance outcomes). Though several important empirical questions remain to be investigated with adults and children, including moderators and mediators of outcome, OST seems to be very well received by children and adults and continues to appear promising.

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