Empirically Supported Treatments for Specific Phobia in Children: Do Efficacious Treatments Address the Components of a Phobic Response?

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Empirically supported treatments for childhood specific phobias are reviewed and critiqued using bioinformational theory (Lang, 1979). Treatments in these trials have been based on different underlying principles of change and have placed different priorities on altering the tri-partite components of the pathological fear response (i.e., physiology, behavior, cognition) as well as the overall subjective experience of fear. Some studies place greater emphasis on altering behavior, others on cognition, and still others on physiology. However, these priorities have not always been attended to in guiding the evaluation of treatment outcome. It is suggested that future studies incorporate, in addition to individuals' subjective fear, a theoretically based multimethod approach to assessment. Research is needed to examine the purported principles of change associated with treatment outcome and to determine the clinical utility of such an approach.

Key words:* empirically supported treatments, phobias, bioinformational theory. *[Clin Psychol Sci Prac 12: 144–160, 2005]

A specific phobia is an intense, enduring fear of an identifiable object or situation that leads to anxiety symptoms, distress, and avoidance (American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders,* 4th ed., 1994; *DSM–IV*). Specific phobias frequently begin during childhood and adolescence (Antony & Barlow, 2002; Öst, 1987). According to the *DSM-IV*, childhood fears evolve into specific phobias when they are persistent and excessive (criterion A), lead to undue physiological arousal (criterion B), cause distress or avoidance (criterion D), and persist for six or more months (criterion F). *DSM-IV* indicates that children may not fully understand their fears are irrational and excessive and that they may not totally comprehend the limitations and interference imposed by their fears. Such developmental considerations are important when applying "adult" diagnostic criteria to children in general (Ollendick, Grills, & King, 2001) and to children with specific phobias in particular (Ollendick, Davis, & Muris, 2004).

It is estimated that over 350,000 children and adolescents in the United States have clinically significant specific phobias at any one point in time (based on 5% of the estimated 71 million children and adolescents in the United States; Ollendick et al., 2004; United States Census Bureau, 2000). These extreme fears also occur in approximately 15% of children referred to outpatient and other mental health settings and are generally more prevalent in girls than boys and in younger than older youth. Community samples of phobic children have been found to have low rates of comorbidity, whereas clinic-referred samples have been found to be highly comorbid with other disorders (Muris, Schmidt, &

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doi:10.1093/clipsy/bpi018

Merckelbach, 1999; Ollendick, Hagopian, & King, 1997; Ollendick, King, & Muris, 2002).

Given the prevalence and severity of these symptoms and their potential impact on developmental trajectories, it is not surprising that several interventions for specific phobia and its associated symptoms have been developed and evaluated and found to have varying degrees of empirical support according to guidelines put forth by Division 12 of the American Psychological Association (Task Force, 1995; Chambless & Ollendick, 2001). Evaluation of treatment efficacy, however, has tended to focus on limited and at times inconsistent outcome measures. That is, most studies have tended to focus on only one component of the emotional response (e.g., behavior) and have not examined the effects of treatment on other equally important components that comprise the phobic response (e.g., cognition, physiology). As noted by Lang and colleagues, fear is a loosely linked network of responses that span feeling, thought, behavior, and physiology (Lang, 1979; Lang, Cuthbert, & Bradley, 1998). It is conceivable that some treatments may weaken several links simultaneously whereas others might weaken only one of the response components (Marks & Dar, 2000).

No effort has been made to systematically evaluate the specific targets of the intervention or link these targets to specific intervention strategies. In this review, we address the extent to which the three response components have been examined in treatment outcome studies and speculate as to whether it is necessary to do so for truly efficacious outcomes. To date, treatments have been defined as efficacious with support from any one of these response components and, not infrequently, with conflicting support across the response modalities.

This review draws upon Lang's (1979) description of response units that are associated with the three components of an emotional response: physiology, behavior, and verbal responses/cognition. In essence, fear is conceived of as a neural program that facilitates escape and the avoidance of danger. In most circumstances, fear dissipates as the potential for harm decreases. Pathological fears differ, however, from other fear networks in several meaningful ways. Pathological fear networks incorporate inaccurate views of the world that are accompanied by exaggerated emotional responses, the avoidance of harmless stimuli, and, for the most part, heightened physiological events. Accordingly, specific phobia can be described as the pathology of a highly coherent fear network (i.e., a pathology organized around a highly integrated emotional network and stimulus representation). Individuals with specific phobia, for example, have been found to have stronger physiological reactions to their phobia-relevant stimuli than social phobics and agoraphobics exposed to their respective stimuli (Cook, Melamed, Cuthbert, McNeil, & Lang, 1988).

Even so, we argue that a phobic response is more than physiology, cognition, and behavior. A phobic response also entails a discernable, though vague, subjective affect—"subjective fear." While subjective fear may be difficult to define, it remains an important dimension to the phobic patient. Usually, it is this subjective feeling that patients find aversive and want to reduce. As a result, we have chosen to evaluate treatment efficacy for phobias using Barlow's expanded definition of emotion: "in addition to the subjective experience of affect [subjective fear], emotion is also considered to be fundamentally a set of expressive behaviors, an integrated neurobiological response, and a cognitive perception or appraisal" (Barlow, 2002, p. 37). Given this conceptualization, we draw distinctions among measures that assess subjective fear as one component (i.e., does the child report subjective fear; e.g., "how afraid of dogs are you?", "what is your current level of distress?"), behavior as a second component (i.e., can the child approach; e.g., "what do you do when you see a dog?"), physiology as a third component (i.e., does the child react physiologically; e.g., "how does your body feel when you see a dog?"), and cognition as the fourth and final component (i.e., does the child have catastrophic cognitions; e.g., "how likely is it that a dog will harm you?"). It is important to note that these components can be assessed using a variety of assessment measures including self-reports, parent reports, structured interviews, and behavioral observations. For example, both physiological reactions to phobic stimuli and catastrophic beliefs can be assessed via self-report questionnaires. Alternatively, such components could be assessed through a highly detailed behavioral observation system, or even by parent or caregiver reports.

In this review, the principles underlying therapeutic change will first be considered for each intervention and

the specific physiological, behavioral, and cognitive targets of the interventions will be highlighted. The changes in physiology, behavior, cognition, and resultant subjective fear will be used to evaluate and critique the treatment outcomes associated with these therapies. These new criteria are introduced by us specifically for use in evaluating the efficacy of treating specific phobias. Finally, as many of these treatments have been evaluated previously using traditional EST criteria (e.g., Compton, Burns, Robertson, & Egger, 2004; Ollendick & King, 1998, 2000, 2004), we update previous reviews and provide a critical evaluation of a variant of cognitive behavior therapy—One Session Treatment (Öst, 1989, 1997)—that has not been included in the earlier reviews.

EMPIRICALLY SUPPORTED PSYCHOLOGICAL TREATMENTS FOR CHILDHOOD SPECIFIC PHOBIA

Since the 1990s, a movement toward evidence-based care has sought to demonstrate empirical substantiation for various medical and psychological treatments. The goal has been to provide clinical recommendations to practitioners and the most efficient and effective care to patients. The Task Force on Promotion and Dissemination of Psychological Procedures (i.e., the Task Force) released key reports listing various empirically supported treatments (ESTs; Task Force, 1995; followed by Chambless et al., 1996, 1998; and Chambless & Ollendick, 2001; also see the *Journal of Clinical Child Psychology*, Volume 27, 1998 and the *Journal of Consulting and Clinical Psychology*, Volume 66, 1998 for special issues on ESTs and a review of the various criteria for empirical support). The research on these treatments was evaluated using arguably strict criteria: treatments were suggested to be either "well-established," "probably efficacious," or "experimental" (in decreasing order) given the empirical evidence. We now review several interventions that have been identified as providing empirical support in controlled research.

Systematic Desensitization

Brief description. Wolpe (1958) integrated classical conditioning theory with the deep muscle relaxation research of Jacobson (1938) as the basis of systematic desensitization (SD). According to this perspective, clinical fears and anxieties are thought to result from classical conditioning procedures similar to those observed in laboratories. The goal of therapy is to make "use of particular responses that, through inhibiting anxiety, weaken neurotic habits" (Wolpe, 1958, p. 112). In SD, a patient is instructed to engage in one of a number of possible anxiety-inhibiting responses while undergoing hierarchical exposure to the anxiety-evoking stimulus (Wolpe, 1958). During either imaginal or in vivo exposure, a decrease in associative strength to the fear-evoking stimulus is thought to result from a participant engaging in an incompatible response that suppresses or eliminates anxiety responses. Wolpe (1958) generally advised the use of relaxation techniques for anxiety disorders but also suggested the use of other counter-conditioning agents such as humor, eating, and sexual behavior that would weaken the anxiety response.

Underlying principles of change and response component targets. According to Wolpe (1958), the primary goal during SD is to eliminate avoidance behavior by inhibiting anxiety, defined to be "the autonomic response pattern or patterns that are characteristically part of the organism's response to noxious stimulation" (p. 34). To accomplish this inhibition, the primary intervention is physiological training (i.e., relaxation) that is systematically and gradually paired with the anxiety response. Secondary to this goal is a gradual increase in stimulus intensity without subsequent avoidance. When considered in the context of bioinformational theory, SD then is an intervention that primarily attempts to adjust the intensity of the physiological component of the emotional response (i.e., "autonomic response patterns"). The behavioral component is a target as well; however, therapeutic interventions aimed at changing avoidant behavior become a secondary goal that is hypothesized to occur via reduction in the physiological component. The cognitive component is not an active target of the intervention, though—depending upon the degree of emotional network activation—cognitive responses may be engaged and altered as well. However, cognition is not the target of change. The "feeling" of anxiety is thought to be reduced most parsimoniously by addressing the physiological component.

Table 1. Examination of empirical support for various specific phobia treatments

Evidence for Efficacy at Treating Response Component Symptoms

Treatment	Study	Physiology	Behavior	Cognition	Subjective Fear
Imaginal Desen.	Barabasz (1973)	GSR>Ctrl, HR=NS	BAT>Ctrl	*	*
	Kondas (1967)	Palmar=NS	*	*	CR>Ctrl
	Mann & Rosenthal (1969)	*	BAT>Ctrl	*	CR>Ctrl
	Miller et al. (1972)	*	PR>Ctrl	*	PR>Ctrl
In Vivo Desen.	Kuroda (1969)	*	Beh>Ctrl	*	*
	Ultee et al. (1982)	*	BAT>Tx	*	OR>Ctrl
Reinforced Practice	Obler & Terwilliger (1970)	*	PRBeh>Ctrl	*	*
	Leitenberg & Callahan (1973)	*	BAT>Ctrl	*	*
	Sheslow et al. (1983)	*	BAT>Tx	*	CR=NS
	Menzies & Clarke (1993)	*	BAT>Tx	*	C/P/OR>Tx
	Silverman et al. (1999)	*	PR=Tx	CR=Tx	C/PR=Tx
Participant Modeling	Ritter (1968)	*	BAT>Tx	*	CR=NS
	Bandura et al. (1969)	*	BAT>Tx	CR>Tx	CR>Tx
	Blanchard (1970)	*	BAT>Tx	*	CR>Tx
	Murphy & Bootzin (1973)	*	BAT>Ctrl	*	*
	Lewis (1974)	*	BAT>Tx, OR>Tx	*	OR>Tx
Cognitive-Behavioral	Kanfer et al. (1975)	*	BAT>Ctrl	*	*
	Graziano & Mooney (1980)	*	PR>Ctrl	*	PR>Ctrl
	Silverman et al. (1999)	*	PR=Tx	CR=Tx	CR, PR=Tx
One-Session	Muris et al. (1998)	*	BAT=Tx	*	CR>Tx
	Öst et al. (2001)	HR/BP=NS	BAT>Tx	*	CR=Tx, >Ctrl
	Muris et al. (1997)	SCL = NS	BAT>Tx	*	CR>Tx

Key: * = not measured, P = parent, C = child/adolescent, O = other observer, R = report, BAT = behavioral avoidance task, Beh = other behavioral measure, GSR = galvanic skin response, SCL = Skin Conductance Level, Palmar = palmar sweat index, HR/BP = heart rate/blood pressure, > = better than, = = equivalent to, Tx = other treatments/psychological placebos, Ctrl = control, NS = not significant

Empirical status. Both imaginal and in vivo SD for the treatment of childhood phobias obtain probably efficacious status (see Table 1 and Table 2 for summaries). The studies suggest that imaginal desensitization is more effective than no treatment (Barabasz, 1973; Kondas, 1967; Kuroda, 1969; Mann & Rosenthal, 1969; Miller, Barrett, Hampe, & Noble, 1972; Ultee, Griffioen, & Schellekens, 1982), more effective than relaxation training when used alone (Kondas, 1967), but less effective than modeling (Mann & Rosenthal, 1969). However, SD cannot be considered well established because it has not been found to be superior to other psychological interventions in at least two or more studies conducted by different investigatory teams.

Response component outcomes. Even though SD has probably efficacious status according to Task Force (1995) criteria, a closer examination is necessary to determine if the treatment has been successful in reducing the components of an emotional response. First, the four imaginal desensitization studies did not include a measure of cognition. Moreover, three of the

Table 2. Summary of empirically supported treatment status and the physiological, behavioral, and cognitive targets of interventions

		EST Status					
		Targets			Proposed EST Status		
Treatment	(Ollendick & King, 1998)	Phy	Beh	Cog	Physiology	Behavior	Cognition
Imaginal Desensitization	Probably Efficacious	High	Med	Low	Exper'l.	Prob. Effic.	Exper'l.
In Vivo Desensitization	Probably Efficacious	High	Med	Low	Exper'l.	Prob. Effic.	Exper'l.
Reinforced Practice	Well-Established	Low	High	Low	Exper'l.	Well-Establ.	Prob. Effic.
Participant Modeling	Well-Established	Low	High	Med	Exper'l.	Well-Establ.	Prob. Effic.
Cognitive-Behavioral	Probably Efficacious	Med	High	High	Exper'l.	Prob. Effic.	Prob. Effic.
One-Session Treatment	*N/A*	*High*	*High*	*High*	*Exper'l.*	*Well-Establ.*	*Exper'l.*

Note: Phy=Physiology, Beh-Behavior, Cog=Cognition, Exper'l.=Experimental Status, Prob. Effic.=Probably Efficacious Status, Well-Establ.=Well-Established Status.

four examined the behavioral component. Mann and Rosenthal (1969) and Barabasz (1973) found that children treated with SD performed significantly better than children in control groups on tasks similar to behavioral avoidance tasks (BAT), and Miller et al. (1972) found parental behavior checklist ratings to be significantly better for children receiving SD than controls. Three studies found support for SD's effects on subjective fear. When SD was compared to controls, Mann and Rosenthal (1969) reported significant improvement on a self-report of subjective fear, Miller et al. (1972) reported significant improvement on parent's ratings of children's fear severity and on parent's other-report ratings of fear, and Kondas (1967) reported SD superior to imaginal exposure on a self-report of fear. As for the physiological component, Barabasz (1973) found significantly lower galvanic skin responses in treated participants compared to controls; however, Kondas (1967) found no significant differences when examining differences in palmar sweat indices. As a result, standard imaginal desensitization can only be considered "experimental" for treating the cognitive and physiological components of the phobic response. The intervention can, however, be considered probably efficacious for the treatment of the behavioral component and for the alleviation of subjective fear.

In a study examining in vivo desensitization, Ultee et al. (1982) found it superior to imaginal desensitization on a BAT and superior to controls on an observer's ratings of fear. Kuroda (1969) found treatment superior to controls on a behavioral task. As a result, in vivo desensitization must be considered "experimental" for treating subjective fear and the physiological and cognitive components of the fear response. However, it may be considered probably efficacious for the behavioral component, although findings are limited.

Summary and critique. SD targets physiology with a high priority, behavior with a moderate priority, and cognition with a low priority. Specifically, the goals of SD are to (a) alter the intensity of the physiological response, and (b) eliminate avoidance behavior. It is disappointing to note that most studies did not include measures of subjective fear and physiology consistent with the emphasis of the treatment on these two primary response modalities. Moreover, with Wolpe's (1958) clear assertions that the treatment is effective by inhibiting autonomic response patterns, it is disconcerting that measures of physiological change have rarely been included and, when they were included, were significant in only one of the two studies using such measures (Kondas, 1967).

Extrapolating from Lang (1977), SD's focus on stimulus units also lacks therapeutic completeness. A shortcoming of SD may be the incomplete representation of the phobic situation: the patient is completely self-reliant for activation of the meaning and response units. Moreover, for comprehensive, and presumably more effective, therapy to take place, physiological, behavioral, and cognitive responses must all be elicited during therapy (Lang, 1977). SD's ability to be sufficiently evocative is questionable, especially given its emphasis on relaxation in the presence of a phobic stimulus instead of directly experiencing the physiological component of the phobic response in the absence of safety behavior.

Reinforced Practice

Brief description. Reinforced practice (RP) began as a treatment for specific phobia in the late 1960s and early 1970s. Research at that time had demonstrated that graduated repeated practice, positive reinforcement, and therapist feedback and instructions were all relatively successful techniques for treating anxiety (Ollendick & Cerny, 1981). Encouraged by early studies, therapists began combining these techniques and found the results to be superior to other therapies (e.g., SD; Barlow, Agras, Leitenberg, & Wincze, 1970). As a result, "reinforced practice" came to designate the use of operant procedures during repeated, controlled, graduated practices (i.e., exposures) in which a therapist provided verbal feedback and reinforcement for overcoming avoidance behavior (Leitenberg & Callahan, 1973). The assumption, founded in Skinnerian principles, is that "fear is not only a response of glands and smooth muscles, it is (also) a reduced probability of moving toward a feared object and a heightened probability of moving away from it" (Skinner, 1988, p.172). This approach to treatment is concerned with the patient's previous behavioral and conditioning encounters with a stimulus situation and not particularly with the physiology, feelings, or cognition associated with such events.

Underlying principles of change and response component targets. The goal of RP is to weaken the negative associations to the phobic stimulus that lead to avoidance behavior by strengthening positive associations through reinforcement of approach behavior. To accomplish this goal, the main mechanism of change in the intervention is the elimination of avoidance. Taken in the context of bioinformational theory, this intervention places the highest priority on altering the behavioral component of the phobic response. Moreover, little to none of the therapist's effort is directed at alleviating distorted cognition or exaggerated physiology. The analysis and alteration of contingencies is the avenue to behavioral change.

Empirical status. RP has been considered a well-established treatment for phobias (Ollendick & King, 1998). Two early studies suggested that RP was more effective than a no-treatment control (Leitenberg & Callahan, 1973; Obler & Terwilliger, 1970), and subsequent studies found it more effective than verbal coping skills (Sheslow, Bondy, & Nelson, 1983) and modeling (Menzies & Clarke, 1993), and equivalent to cognitive-behavioral therapy (CBT; Silverman et al., 1999).

Response component outcomes. As with SD, a closer review of the five studies examining the efficacy of RP is informative. Only one of the five studies included measurement of the cognitive component (Silverman et al., 1999). Silverman et al. (1999) used self-report to assess negative cognitive errors (i.e., negative interpretations of situations), and the results suggested that the RP group showed improvement on this measure equivalent to the CBT group. As a result, this treatment can be considered only probably efficacious for the alleviation of cognitive symptoms. Three studies, however, included measurements of subjective fear (Menzies & Clarke, 1993; Sheslow et al., 1983; Silverman et al., 1999). Sheslow et al. (1983) found no significant treatment group differences in subjective fear thermometer ratings; however, Menzies and Clarke (1993) found RP to be superior to control and modeling conditions on child-reported affect (self-report instrument), parent-reported affect (other-report instrument), and trained-observer ratings of affect. Silverman et al. (1999) found the RP group and CBT equivalent on self-report measures administered to participants and their parents. Even with these mixed findings, RP can be viewed as well established for the treatment of subjective fear. Finally, two studies found RP to be superior to the no-treatment control on behavioral measures (Leitenberg & Callahan, 1973; Obler & Terwilliger, 1970; on BAT and behavioral parent-report respectively). Two additional studies demonstrated performance on BATs to be superior for RP than verbal coping skills (Sheslow et al., 1983) and modeling (Menzies & Clarke, 1993). Moreover, Silverman et al. (1999) found RP equivalent to CBT using parent reports of behavior. Thus, RP can be said to enjoy well-established status for treating the behavioral component of the phobic response. Unfortunately, none of the studies reviewed included a measure of the physiological component of the targeted phobias.

Summary and critique. RP is a behavioral treatment that focuses on eliminating avoidance behavior with operant conditioning, shaping, and extinction. As a result, a therapist primarily targets the *behavioral* component of the emotional response with attention to physiological and cognitive symptoms receiving little or no priority. Encouragingly, however, research has incorporated behavioral indicators of treatment success. Although there was no examination of physiological symptoms and only one examination of the cognitive component, the studies examining RP have made an effort to test the supposed theoretical underpinnings of the treatment.

However, when considering RP as a treatment for specific phobia and not simply for avoidance behavior, the intervention can be found lacking. The therapy only actively targets one component of the phobic response, making it likely that the full emotional network is not open to new information, an occurrence said to be necessary for emotional processing (Foa & Kozak, 1998). Overall, RP seems exceptional at eliminating behavioral avoidance; however, this is but one component of the entire fear response, and a severe fear may still be present. The implication of these findings is that a child's behavioral avoidance may have improved and the behavioral approach may impart some degree of well-being (i.e., the mixed subjective fear findings), but mild to severe physiological and cognitive symptoms may remain.

Participant Modeling

Brief description. Participant modeling (PM), originally referred to as contact desensitization, was developed by Ritter (1965, 1968) and is grounded in social-learning theory. The intervention is based upon the idea that learning can occur vicariously through the guidance and observation of a model. According to Bandura (1969), social-learning theory interventions achieve success by changing behavior and its consequences through use of appropriate social models. From this paradigm, specific phobia can be alleviated by means of vicarious extinction in which an observer begins by watching a model interact with the phobic stimulus. The associations between the conditioned stimulus and the unconditioned stimulus are weakened when there is no aversive outcome for the model (Bandura, 1969). Therapists built upon this principle by focusing more on the instructive capabilities of the model. Extending beyond learning by observation in isolation, PM uses a vicarious extinction procedure that incorporates direct verbal and behavioral instruction from the model (i.e., therapist) with the patient present.

Underlying principles of change and response targets. The goal of modeling according to Bandura (1969) is to change behavior. With PM, however, the therapist also verbally and physically instructs the child in how to approach and interact with the phobic stimulus. There is a significant skill-building component to the intervention. As a result, PM produces change by eliminating avoidance, as the patient must watch the model for learning to occur. The therapist also must teach the patient new skills for approaching and interacting with the phobic stimulus. PM requires a patient to view, approximate, and undertake various behavioral experiments that eventuate in no aversive outcomes. A secondary goal of treatment is to create an environment in which a patient's distorted beliefs are tested and disconfirmed first by the model and then the self. According to Bandura, Blanchard, and Ritter (1969), "the absence of *anticipated* negative consequences is a requisite condition for fear extinction" (p. 174; italics added). The idea that the event is anticipated suggests a more cognitive process than merely the behavioral notion that associative strength is altered after viewing the consequences. PM targets the behavioral component of a phobic response; however, the cognitive component is of clear importance as well. Physiology is not a target of this intervention.

Empirical status. PM has well-established empirical status (Ollendick & King, 1998). The five PM studies in children reviewed by Ollendick and King (1998) suggest that PM is superior to a no-treatment control (Blanchard, 1970; Murphy & Bootzin, 1973) and to live modeling (Ritter, 1968) and filmed modeling (Bandura et al., 1969; Lewis, 1974). PM also has been found to be more effective than SD (Bandura et al., 1969).

Response component outcomes. A closer examination of the five studies used to support the empirical status of PM reveals varying support for the intervention's ability to address the components of the fear response. Three of the studies report significant improvement in subjective fear. Bandura et al. (1969) found that PM was related to greater improvement on subjective fear during the BAT (i.e., subjective units of distress; SUDS) compared to SD and greater improvement on affective and attitudinal self-reports compared to modeling or SD. Blanchard (1970) found that PM was associated with less subjective fear during a BAT, less generalized fear, and lower fear attitudes than either modeling or instruction only. Also, PM was associated with greater improvement than modeling in overall fear level (Blanchard, 1970). Lewis (1974) reported PM was associated with lower fear ratings than modeling. Together, these findings suggest that PM's effects on subjective fear can be considered well established.

Support for the effects of PM on the behavioral component is documented by all five studies. Whereas Murphy and Bootzin (1973) only found significant BAT performance differences relative to controls, the other four studies found PM to be associated with significantly better BAT performance compared to modeling (Bandura et al., 1969; Blanchard, 1970; Lewis, 1974; Ritter, 1968), SD (Bandura et al., 1969), or other treatments (e.g., participation alone; Blanchard, 1970; Lewis, 1974). As a result, PM can be considered well established for the alleviation of behavioral symptoms as well.

However, only one study included a pseudo-cognitive component measure. Bandura et al. (1969) found that those treated with PM evidenced significantly more positive descriptions of snakes than those

treated with modeling or SD. PM's demonstrated superiority on this measure suggests it is probably efficacious for the cognitive component. Unfortunately, none of the studies included a measure of the physiological component.

Summary and critique. The focus of PM is changing the behavioral component. Secondary to this is cognition with little or no emphasis upon physiology. It is encouraging that assessment procedures have generally included measures that address the targeted components of the phobic response. Even more interesting is the strong support for the alleviation of subjective fear. Given that this intervention is believed to reduce phobic symptoms through extinction procedures, this empirical support for the reduction of subjective fear has two possible interpretations. First, and consistent with a strict associative account, specific phobias may be mostly or totally the result of conditioning experiences and subject to alteration by extinction. Second, and more probable, the role of extinction procedures may be overstated and habituation is another key component to the treatment. In either case, more study is necessary. One further weakness of the studies reviewed is the lack of support for the cognitive component. Future studies should include cognitive measures that are more consistent with theory (e.g., a measure of the distorted anticipatory beliefs posited by Bandura, 1969, and Bandura et al., 1969).

Cognitive-Behavioral Therapy (CBT)

Brief description. The application of CBT to the treatment of various disorders has been guided by two foci: (a) in any psychopathology there is an information-processing bias that leads to "dysfunctional behavior, excessive distress, or both," and (b) that biases are integrated in stable cognitive structures (i.e., schemas) that serve to guide and direct behavior and cognition (Beck, 1993, p.196). Therapy focuses on changing problematic behavior (i.e., avoidance in specific phobia) and identifying and countering automatic thoughts—in specific phobias, thoughts regarding threat, vulnerability, and physical danger on the periphery of the conscious mind (Beck, 1991, 1993). The result is a hybrid therapy that attempts to reduce behavioral avoidance and alter automatic thoughts, biases, and cognitive distortions. CBT makes use of well-known behavioral procedures such as modeling, exposure, operant conditioning, and relaxation, and also attempts to deal with a child's distortions, deficiencies, and physiological responding (Kendall, 1993).

Underlying principles of change and response component targets. CBT views psychopathology as the dominance of a negative schema (i.e., a cognitive structure for interpreting the world; Beck, 1991). The goal of CBT is to guide a child through the development of a new positive schema or the alteration of an old negative schema so that a new positive cognitive structure can serve to "re-interpret" the world (Kendall, 1993). With specific phobia, the goal is to replace phobic schemas with structures that interpret the stimulus as non-threatening. Effective therapy evokes the emotional response, deals with behavior, and focuses on the patient's cognitive processes.

CBT makes use of cognitive and behavioral interventions by questioning the evidence, testing beliefs through behavioral experiments, eliminating avoidance, and enhancing skills. A moderate emphasis is placed on altering physiological responding (e.g., relaxation training). Though repeated exposure can be a component to successful CBT, the goal of exposure is to elicit and challenge catastrophic cognitions, with a reduction in physiological response being secondary. CBT primarily attempts to attenuate the *cognitive* and *behavioral* components of an emotional response. Although change in the physiological component is acknowledged as important, it is not a prominent feature (i.e., it becomes a moderately targeted component of the treatment).

Empirical status. Based upon the three studies investigating CBT, it may be considered probably efficacious. Looking at children afraid of the dark, Kanfer, Karoly, and Newman (1975) found a verbal competence group (e.g., those who repeated "I am a brave boy/girl") was able to spend more time in a dark room than controls. Graziano and Mooney (1980) similarly found CBT (i.e., an expanded variant of Kanfer et al., 1975) superior to a wait-list. Moreover, Silverman et al. (1999) found CBT equivalent to RP. As a result, and as suggested by Ollendick and King (1998), CBT requires more study to obtain well-established status.

Response component outcomes. As suggested above, CBT attempts to alter the catastrophic cognition and avoidance behavior associated with an emotional response. It seems appropriate, then, that Kanfer et al. (1975), Graziano and Mooney (1980), and Silverman et al. (1999) all included behavioral measures. Kanfer et al. (1975) measured children on a task similar to a BAT (i.e., the amount of time children remained in a dark room without increasing light intensity) and found those treated with CBT tolerated the lack of light better than controls. Graziano and Mooney (1980) used parents' records of bedtime behavior (e.g., the proportion of days the child was afraid at bedtime, number of min to get in bed, number of min to get to sleep) to suggest behavioral improvement with CBT. Silverman et al. (1999) found equivalence on a parent report of behavior. Unfortunately, none of the studies incorporated a measure of participants' physiology and, somewhat surprisingly, only one obtained a measure of cognition. Silverman et al. (1999) found treatments equivalent on a cognitive self-report assessing negative interpretations of hypothetical situations. As a result, CBT for childhood phobias can be considered probably efficacious for the behavioral and cognitive components and only experimental for the physiological components of a phobic response.

Subjective fear was examined by Graziano and Mooney (1980) and by Silverman et al. (1999). Graziano and Mooney (1980) found those treated with CBT improved more than controls on a parent report, while Silverman et al. (1999) found significant improvement but equivalency between groups based on child reports. CBT can therefore be considered probably efficacious for the alleviation of subjective fear.

Summary and critique. Even though CBT deserves probably efficacious status, it is evident that CBTs for specific phobia require more study in children. CBT is promising because it targets cognition and behavior with a high priority and physiology with a moderate priority. Presumably, the intervention should provide greater activation of the associative network than any of the ESTs of specific phobia heretofore reviewed. By actively targeting all of the components of the emotional response at some level (i.e., physiology-moderate, behavior-high, cognition-high), CBT should access more of the associative network and offer greater potential for integrating new information. Unfortunately, the only randomized clinical studies identified failed to consistently include cognitive measures and included no physiological indices.

One-Session Treatment (OST)

Brief description. Öst's (1989, 1997) one-session treatment for specific phobia (OST) is an intensive graduated-exposure therapy that integrates several aspects of the aforementioned therapies. In a single session maximized to three h, a therapist and patient work collaboratively through the steps of the individual's fear hierarchy. Öst (1989, 1997) has broadly described OST as a combination of in vivo exposure and PM; however, a closer examination reveals additional techniques in this variant of CBT (e.g., skill-building plus verbal and physical reinforcement plus direct cognitive challenges through behavioral experiments). The goal of OST is to "expose the patient 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). Behavioral experiments conducted during therapy serve to actively facilitate treatment in three ways: by allowing fear to habituate, by actively eliciting and challenging catastrophic cognitions, and by preventing avoidance of the phobic stimulus.

Underlying principles of change and response component targets. The goal of OST is to expose the patient to the phobic stimulus and prevent behavioral and cognitive avoidance until the patient's "anxiety" decreases by at least 50% and emotional processing has occurred (Öst, 1989, 1997). Öst (1997) construes anxiety as both physiological and subjective distress. Behaviorally, OST prevents avoidance of the phobic stimulus. If during a step the patient wishes to go no closer, the therapist actively attempts to prevent the patient from moving or looking away. Cognitive avoidance is also to be prevented. The therapist deals actively with catastrophic cognitions during treatment and encourages the patient to realize the feared negative consequences will not occur. Finally, a decrease in the intensity of physiological symptoms is a key component before continuing on to more difficult steps. In this way, OST

attempts a comprehensive intervention by actively targeting all three components of the phobic response, as well as subjective distress.

In addition, there is a component to OST that sets it apart from the other therapies: namely, a massed single session of exposure. Though still controversial, the animal and human literatures support the superiority of massed extinction and brief intertrial intervals between habituation trials for reducing responses. OST procedures attempt to maximally habituate defensive reactions and extinguish conditioned responses.

Empirical status. A formal review of the empirical status of OST has yet to be conducted. OST seems promising given that the major techniques used during the intervention, exposure and PM, have been found well established for treating phobias in the adult literature (Chambless et al., 1998) and the child literature (Ollendick & King, 1998, 2004). However, current examination of the child phobia literature reveals only three efficacy studies that evaluate OST and that meet the Task Force's guidelines. In the first study, Muris, Merckelbach, Holdrinet, and Sijsenaar (1998) found OST superior to eye-movement desensitization and reprocessing (EMDR) on two subjective fear measures (i.e., child self-report and subjective fear during the BAT). Muris, Merckelbach, Van Haaften, and Mayer (1997) also compared OST to EMDR in a crossover design. Their results suggest OST was superior to EMDR on behavioral performance (i.e., BAT) and subjective fear (i.e., BAT spider fear at final step). Finally, Öst, Svensson, Hellström, and Lindwall (2001) found OST without a parent present resulted in better behavioral outcomes than OST with a parent present or a wait-list. There was also a significant difference between the two OST conditions and the wait-list on the child's subjective rating of fear during the BAT (i.e., SUDS). Treatment effects were maintained at one-year follow-up.

Summarizing, OST with children has been found to be more effective than other treatments (i.e., EMDR or OST with a parent present) or psychological placebo in three randomized clinical trials by two different groups of investigators (Muris et al., 1998; Öst et al., 2001). Using Task Force guidelines, these studies suggest well-established support for OST with children.

Response component outcomes. As with the other ESTs, a closer analysis of OST's effects on the emotional response is warranted. OST was found superior to OST with a parent present and a wait-list on a behavioral measure (i.e., BAT; Öst et al., 2001). OST was also found equivalent to EMDR on BAT performance in one study (Muris et al., 1998) and superior to EMDR on BAT performance in another study (Muris et al., 1997). These results suggest well-established status for the behavioral component. No physiological support for the intervention was found in the studies that measured heart rate and blood pressure (Öst et al., 2001) or skin conductance level (Muris et al., 1997). However, support for the alleviation of subjective fear was found. OST was found superior to EMDR on self-reports (Muris et al., 1998) and child ratings of subjective fear during the BAT (Muris et al., 1997; Muris et al., 1998). Öst et al. (2001) found that OST was superior to a wait-list and equivalent to OST with a parent present on BAT fear ratings. These findings suggest that OST should be considered probably efficacious for alleviating subjective fear (i.e., replication of superior effects by another team is needed). Finally, none of the three studies included a measure that could be considered an assessment of the cognitive component. This failing requires that OST be considered experimental for the alleviation of cognitive symptoms in children.

Summary and critique. According to Öst (1989, 1997), OST targets catastrophic cognitions, physiological reactions, subjective anxiety, and behavioral avoidance. OST places a high priority on the evocation and treatment of physiology, behavior, and cognition. From a bioinformational perspective, OST should provide one of the best procedures for altering pathological fear networks. By utilizing exposure, PM, RP, and cognitive procedures during a single massed session, OST should excel at eliminating phobic response intensity. Patients who evidenced clinically significant improvement after OST have supported this claim: OST is associated with clinical improvement rates of 85–90% in adults (Öst, 1989; Öst, Brandberg, & Alm, 1997) and approximately 90% in children (Öst et al., 2001), while improvement rates of 60–80% are representative of other ESTs for the anxiety disorders (Woody & Ollendick, in press).

Presumably, OST gradually evokes the emotional network and, subsequently, introduces new information that is thought to lead to improvement. Graduated exposure provides an effective means for activating stimulus and response units in therapy. Through the use of in vivo graduated exposure, OST allows habituation and extinction to occur without relying on a child's imagination. Theoretically, exposure serves to evoke the phobic response and introduce new information into the emotional network. However, exposure is not likely the sole mechanism of change in the treatment.

RP also helps to eliminate avoidance of the phobic stimulus during the exposure. The therapist is an active agent during therapy, encouraging and reinforcing the participant to move further up the fear hierarchy. In addition, the use of PM demonstrates non-fearful behavior and imparts skills to the patient. RP provides incentives to the child for approach, whereas PM instructs the child in how to approach. However, as Rachman (1976) and the *DSM-IV* suggest, the absence of avoidance behavior should not be equated with the absence of intense fear or a phobia.

OST also makes use of a participant's catastrophic cognitions. Patients are encouraged to test the accuracy of their phobic beliefs during and after behavioral experiments. This technique increases the likelihood of meaning units being activated during therapy. Even so, the use of cognitive strategies alone has not been shown to be successful at reducing specific phobia in children; rather, they have been effective as one component in a larger CBT that incorporates reinforcement and exposure (Graziano & Mooney, 1980; Kanfer et al., 1975). Seemingly then, it is the combination of the massed, single-session of treatment and the emphasis on physiology, behavior, and cognition that leads to the enhanced outcomes associated with OST.

Unfortunately, the studies that have examined the efficacy of OST in children have not demonstrated all of these proposed benefits. There is little evidence to suggest a significant physiological benefit from treatment. Also, there has yet to be a cognitive measure used to assess change in catastrophic cognitions in treated children. Though these issues may be resolved with more study, the lack of evidence qualifies the previous depiction of the effects and principles of change in OST for children. It may be that part of the treatment actually prevents the habituation of defensive reactions and the extinction of conditioned physiological responses. For instance, the rapid progression of the session could interfere with the time needed to sufficiently habituate responding and counter-condition the fear response. These issues await further investigation.

Summation of Treatments, Limitations, and the Exposure Component

Our review suggests varying levels of empirical support for several psychosocial interventions when EST criteria are applied to the components of the fear response (as summarized in Tables 1 and 2). Arguably, the criteria set forth in this paper of demonstrated efficacy for each of the three response components and subjective fear is a strict one—even more stringent than the highly criticized Task Force (1995) guidelines. Even so, if the goal of empirical support is to systematically evaluate treatment efficacy, then an incomplete appraisal of an intervention's success or failure may be suggested by the Task Force's (1995) criteria. The criteria for the superiority of one treatment over another or a placebo or control condition are sufficiently vague to allow "superiority" to include assessments from vastly different informants (e.g., parents, clinicians, untrained observers) and vastly different measures (e.g., self-reports, parent-reports, BATs, physiological measures). A study may be construed as demonstrating empirical support with performance on only one measure or by only one type of observer, when a closer examination of the results reveals no meaningful differences on other forms or sources of assessment. With this lack of stringency, it seems important to us to use the addition that categorizes support based on the components of the emotional response. This criterion provides greater specificity, but avoids micromanagement of acceptable and unacceptable assessment procedures and protocols. ESTs require assessment strategies that are equally robust if their outcomes are to be viewed credibly (Ollendick, 2003).

We believe the proposed method of analyzing empirical support for various treatments has many benefits. First, the proposed rubric evaluates a therapy on its ability to reduce subjective fear and the physiological, behavioral, and cognitive symptoms associated

with that fear, and it encourages researchers to integrate an evaluation of each component into assessment procedures. The use of multimethod assessment has been an ongoing goal in psychology (Ollendick & Hersen, 1984, 1993), and the inclusion of physiological assessment in research has been a particular focus in the specific-phobia literature (Antony & Barlow, 2002). Second, this system should lead to comprehensive assessment and more authoritative determinations of treatment efficacy. Currently, the lack of comprehensive assessment procedures, especially cognitive and physiological assessments, compromises the conclusions from the studies reviewed above. In particular, the determination that an intervention is successful based on an assessment of only one or two components neglects the various configurations of fear suggested by Rachman (1976). While assessments of diagnostic criteria are informative (e.g., clinical interview, semistructured interview), investigators should be encouraged to use more objective and systematic determinations of psychopathology (e.g., psychophysiological assessment, behavioral assessment). Third, it is encouraging that even with the new criteria for empirical support introduced in this paper, several of the therapies reviewed continue to possess demonstrated efficacy. In particular, PM and RP seem to be highly efficacious for the alleviation of subjective fear and behavioral symptoms, while OST appears to be very effective for reducing subjective fear and behavioral symptoms as well. The finding for OST is not surprising given that it incorporates aspects of PM and RP. Together, these interventions place a high priority on targeting the behavioral component and, and they focus on eliminating avoidance, though OST also has other targets. These therapies are thought to eliminate avoidance behavior, in part, through the use of exposure. As a result, the use of exposure, regardless of theoretical orientation, is an important component to the successful treatment of specific phobia.

In fact, one common element in all of the treatments for specific phobia is the use of exposure. Exposure, whether in vivo or imaginal, is a critical feature in therapeutic success (Antony & Barlow, 2002). Moreover, in the treatment of specific phobia, exposure adds more to an intervention than providing the means to habituation or extinction. According to Lang (1977) the "most potent feared object exists as a functional model in the long-term storage of the brain" (p. 876). The goal of the therapies reviewed here is not the full activation of that image at once (i.e., flooding, implosive therapy), at least not initially. The goal of these therapies is, however, the activation of the stimulus, meaning, and response units stored in memory to a sufficient degree that the emotional network can be altered by new information. Graduated exposures are used in ESTs to activate emotional networks in a systematic, planned, and controlled manner. As demonstrated in our review, the tactics that a therapist chooses to emphasize during an exposure are dictated by the intervention chosen. Exposure provides the opportunity, however, for the therapist to challenge misconceptions, conduct behavioral experiments, reduce fear intensity, reduce avoidance, and improve skills.

FUTURE DIRECTIONS

Our review utilized bioinformational theory's three traditional response components of fear as well as measures of subjective fear to guide the evaluation of ESTs for childhood specific phobia and to suggest various combinations of mechanisms that might lead to change. Each of the five treatments reviewed was suggested to have differential efficacy for the evocation of the pathological fear network and the integration of new information into the network aimed at reducing response intensity. These differences were described as resulting from the specific therapeutic targets of each intervention. For each treatment, the targeting of physiology, behavior, and cognition during the course of a session was prioritized (i.e., a high priority, a moderate priority, or a low priority of treatment). Subsequently, each treatment was evaluated using the priorities of the therapy and the principles of change suggested to impart therapeutic benefit in reference to the actual treatment outcome for each response component. With the exception of PM and RP, researchers did not typically incorporate assessment measures derived from the theoretical underpinnings of the treatment. That is, researchers tended not to incorporate assessment procedures that would determine if the target of the intervention actually changed. Finally, the review of OST was somewhat mixed. The overall evaluation of the treatment was positive, though more investigation of

OST is needed in children. Overall, the systematic review of ESTs according to their differential targeting of the components of an emotional response through various principles of change seems promising.

Implications of our review are fivefold. First, our evaluation of treatment efficacy studies suggests greater specificity can be achieved in the evaluation of ESTs. This level of detail has not sacrificed the utility of empirically supported guidelines in evaluating therapies (i.e., becoming too stringent such that too few treatments meet empirically supported guidelines). To the contrary, use of this new system has corroborated the efficacy of several treatments (e.g., PM, RP, and OST), but also clearly challenged the efficacy of others. Even so, the use of this system implies that all three components in addition to subjective fear should be assessed and addressed in treatment whenever possible. While the argument has been advanced that phobia types can present differently (i.e., different response components may be present and differ in intensity) and that change can occur in one component but then "spread" to eventually affect the others (Marks & Dar, 2000), we believe the standard of care should take all three response components into account, in addition to subjective fear, and plan for their change—not lament their resistance or failure to change. Specifically, implying that a treatment may "spread" to other components leads one to question why those other components could not be addressed in a more timely fashion when techniques exist which can do so more directly and, arguably, more efficiently. However, we also recognize the exigencies of any one individual's presentation may make one treatment more viable over another.

Given that phobia types can differ with regard to the intensity of types of symptoms, we suggest it is crucial to determine if current therapies for specific phobia in children are adequately and efficaciously addressing these differences. The regular inclusion of assessment procedures designed to address the components of a phobic response could help clarify mixed results in the phobia treatment literature with respect to matching treatments to patient characteristics and their clinical presentations. For example, for those phobias where physiological symptoms predominate, physiological retraining through SD may be considered the treatment of choice. However, given our current review SD has obtained only experimental status for alleviating physiological symptoms. Overall, we believe the proposed EST criteria would lead to better specificity in prescribing or proscribing certain treatments for certain phobic presentations.

Second, and following from above, we based our evaluation of these treatments on the theoretical works of Lang (1979), Foa and Kozak (1998), and Barlow (2002). A synthesis of these works suggests that phobias consist of varying degrees of cognitive, physiological, and behavioral symptoms that result in a subjective experience of fear. This paradigm suggests that treatment is effective when techniques activate old associative networks and impart new information (Foa & Kozak, 1998). Given this, it becomes important to note that we draw the theoretical conclusion that treatment becomes increasingly effective when multiple or preferably all components are addressed—and, hence, open to attenuation. While there is limited evidence for this assertion from our review, future research is essential to clarify this issue and provide empirical substantiation of our theoretical conclusions. Empirical questions surrounding this issue are numerous, and much study remains to be done. For example, one can ask whether treatment failures are related to insufficient improvement in unaddressed response components. Also, would treatment efficacy improve with the systematic inclusion of treatment strategies designed to alter the various components of the phobic response? Importantly, and consistent with a focus of our review, these theoretical questions can only be answered by conducting efficacy studies that assess and examine all of the components of the emotional response.

Third, an examination of the principles of change in combination with the prioritization of treatment targets according to the theoretical paradigms of the treatments suggests a "disconnect" between theory and assessment. Surprisingly, researchers have not typically used assessments that would measure the main mechanisms of change in the therapies they sought to study. Notable among these is CBT. In the three studies examining the efficacy of this treatment with children, only one included a measure of distorted or deficient cognition (Silverman et al., 1999). As a result, Prins and Ollendick (2003) have recently questioned the active mechanisms in these therapies.

Fourth, this review has demonstrated the limits of current understanding about the mechanisms of change in treatment. The results of several efficacy studies did not support the primary mechanisms through which change was hypothesized to occur. For example, only mixed support was found for physiological change after use of SD, even though Wolpe (1958) suggested the primary target of the therapy was a patient's autonomic response pattern. Similarly, although change in cognition is thought to be central to CBT, only limited support for that conclusion can be drawn. Potentially, these mixed results may be remedied by further study that uses multiple methods for assessing physiology, behavior, and cognition. Many of the studies with results that failed to support theoretical predictions for the mechanisms of change suffered from inadequate methodologies (e.g., no physiological differences in Öst et al., 2001). Even so, it is possible that the complexities of treatment that facilitate the alleviation of long-standing phobias are too intricate to be summarized in the broad mechanisms of change reviewed here. In this case, new research that focuses on the absence or presence of various mechanisms of change and treatment outcome may be helpful. To this end, it may be necessary to systematically study some interventions in more detail, especially with child populations.

Fifth, it is obvious to us that a developmentally informed understanding of "emotion," and a child's understanding of emotion and its regulation, have not been evidenced in this body of literature. Recently, Southam-Gerow and Kendall (2000, 2002), based at least partially on the work of Eisenberg and colleagues (cf. Eisenberg & Fables, 1992), have called for a synthesis of emotion, behavior, and environmental variables that converge to occasion psychopathology in clinic-referred samples. They suggest a variety of ways in which emotion processes and psychopathology interrelate and carry implications for both the prevention and treatment of these psychopathological disorders. Here, we should note that we based our current review exclusively on the bioinformational theory of emotions as advanced by Lang (1979) and used by Barlow (2002) in his theory of anxiety and its disorders. We did so because of the clear demarcation of the three fear-response modes in these theories and the systematic way in which the interventions could be categorized and their efficacy evaluated.

To some extent these two conceptualizations of emotion may represent overlapping ways of viewing the responses attendant to any emotional syndrome. According to Lang and Barlow, fear—as an emotional response—is a loosely linked network of responses spanning feeling, thought, behavior, and physiology. Eisenberg and her colleagues (1992) place greater emphasis on the child's understanding of the emotional response and the child's regulation of that response. Such an approach places more emphasis on the "meaning" and "regulation" or "control" of such a response. What does it mean to the growing child to experience fear? Or to regulate or manage it over time? What is the child's understanding of the fear response, and what are the implications of this understanding for efficacious treatment? The synthesis of these two seemingly disparate ways of viewing emotion constitutes an important development for the future. Only in this way can we have a truly developmentally informed approach to any treatment with children (see also Kendall & Ollendick, 2004) and determine the empirical status of those treatments.

REFERENCES

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Antony, M., & Barlow, D. (2002). Specific phobias. In D. Barlow (Ed.), *Anxiety and its disorders: The nature and treatment of anxiety and panic* (pp. 380–417). New York: Guilford Press.

Bandura, A. (1969). *Principles of behaviour modification.* New York: Holt, Rinehart, & Winston.

Bandura, A., Blanchard, E. B., & Ritter, B. (1969). Relative efficacy of desensitization and modeling approaches for inducing behavioral, affective, and attitudinal changes. *Journal of Personality and Social Psychology, 13,* 173–199.

Barabasz, A. F. (1973). Group desensitization of test anxiety in elementary school. *The Journal of Psychology, 83,* 295–301.

Barlow, D. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed.). New York: Guilford Press.

Barlow, D., Agras, W. S., Leitenberg, H., & Wincze, J. P. (1970). An experimental analysis of the effectiveness of "shaping" in reducing maladaptive avoidance behavior:

An analogue study. *Behaviour Research and Therapy, 8,* 165–173.

Beck, A. T. (1991). Cognitive therapy: A 30-year retrospective. *American Psychologist, 46,* 368–375.

Beck, A. T. (1993). Cognitive therapy: Past, present, and future. *Journal of Consulting and Clinical Psychology, 61,* 194–198.

Blanchard, E. B. (1970). Relative contributions of modeling, informational influences, and physical contact in extinction of phobic behavior. *Journal of Abnormal Psychology, 76,* 55–61.

Chambless, D. L., Baker, M. J., Baucom, D. H., Beutler, L. E., Calhoun, K. S., Crits-Christoph, P., et al. (1998). Update on empirically validated therapies, II. *The Clinical Psychologist, 51,* 3–16.

Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology, 52,* 685–716.

Chambless, D. L., Sanderson, W. C., Shoham, V., Johnson, S. B., Pope, K. S., Crits-Christoph, P., et al. (1996). An update on empirically validated therapies. *The Clinical Psychologist, 49,* 5–18.

Compton, S. N., Burns, B. J., Robertson, E., & Egger, H. L. (2004). Review of the evidence base for treatment of psychopathology: Internalizing disorders. *Journal of Consulting and Clinical Psychology, 70,* 1240–1266.

Cook, E. W., Melamed, B. G., Cuthbert, B. N., McNeil, D. W., & Lang, P. J. (1988). Emotional imagery and the differential diagnosis of anxiety. *Journal of Consulting and Clinical Psychology, 56,* 734–740.

Eisenberg, N., & Fabes, R. A. (1992). *Emotion and its regulation in early development*. San Francisco: Jossey-Bass.

Foa, E. B., & Kozak, M. J. (1998). Clinical applications of bioinformational theory: Understanding anxiety and its treatment. *Behavior Therapy, 29,* 675–690.

Graziano, A. M., & Mooney, K. C. (1980). Family self-control instruction for children's nighttime fear reduction. *Journal of Consulting and Clinical Psychology, 48,* 206–213.

Jacobson, E. (1938). *Progressive relaxation*. Chicago: University of Chicago Press.

Kanfer, F. H., Karoly, P., & Newman, A. (1975). Reduction of children's fear of the dark by competence-related and situational threat-related verbal cues. *Journal of Consulting and Clinical Psychology, 43,* 251–258.

Kendall, P. C. (1993). Cognitive-behavioral therapies with youth: Guiding theory, current status, and emerging developments. *Journal of Consulting and Clinical Psychology, 61,* 235–247.

Kendall, P. C. (Ed.). (1998). Empirically supported psychological therapies [Special section]. *Journal of Consulting and Clinical Psychology, 66,* 3–167.

Kendall, P. C., & Ollendick, T. H. (2004). Setting the research and practice agenda for anxiety in children and adolescence: A topic comes of age. *Cognitive and Behavioral Practice, 11,* 65–74.

Kondas, O. (1967). Reduction of examination anxiety and "stage-fright" by group desensitization and relaxation. *Behaviour Research and Therapy, 5,* 275–281.

Kuroda, J. (1969). Elimination of children's fears of animals by the method of experimental desensitization: An application of learning theory to child psychology. *Psychologia, 12,* 161–165.

Lang, P. J. (1977). Imagery in therapy: An information processing analysis of fear. *Behavior Therapy, 8,* 862–886.

Lang, P. J. (1979). A bio-informational theory of emotional imagery. *Psychophysiology, 16,* 495–512.

Lang, P. J., Cuthbert, B. N., & Bradley, M. M. (1998). Measuring emotion in therapy: Imagery, activation, and feeling. *Behavior Therapy, 29,* 655–674.

Leitenberg, H., & Callahan, E. J. (1973). Reinforced practice and reduction of different kinds of fears in adults and children. *Behaviour Research and Therapy, 11,* 19–30.

Lewis, S. (1974). A comparison of behavior therapy techniques in the reduction of fearful avoidance behavior. *Behavior Therapy, 5,* 648–655.

Mann, J., & Rosenthal, T. L. (1969). Vicarious and direct counterconditioning of test anxiety through individual and group desensitization. *Behaviour Research and Therapy, 7,* 359–367.

Marks, I., & Dar, R. (2000). Fear reduction by psychotherapies: Recent findings, future directions. *British Journal of Psychiatry, 176,* 507–511.

Menzies, R. G., & Clarke, J. C. (1993). A comparison of in vivo and vicarious exposure in the treatment of childhood water phobia. *Behaviour Research and Therapy, 31,* 9–15.

Miller, L. C., Barrett, C. L., Hampe, E., & Noble, H. (1972). Comparison of reciprocal inhibition, psychotherapy, and waiting list control for phobic children. *Journal of Abnormal Psychology, 79,* 269–279.

Muris, P., Merckelbach, H., Holdrinet, I., & Sijsenaar, M. (1998). Treating phobic children: Effects of EMDR versus exposure. *Journal of Consulting and Clinical Psychology, 66,* 193–198.

Muris, P., Merckelbach, H., Van Haaften, H., & Mayer, B. (1997). Eye movement desensitisation and reprocessing

versus exposure in vivo: A single-session crossover study of spider-phobic children. *British Journal of Psychiatry, 171,* 82–86.

Muris, P., Schmidt, H., & Merckelbach, H. (1999). The structure of specific phobia symptoms among children and adolescents. *Behaviour Research and Therapy, 37,* 863–868.

Murphy, C. M., & Bootzin, R. R. (1973). Active and passive participation in the contact desensitization of snake fear in children. *Behavior Therapy, 4,* 203–211.

Obler, M., & Terwilliger, R. F. (1970). Pilot study on the effectiveness of systematic desensitization with neurologically impaired children with phobic disorders. *Journal of Consulting and Clinical Psychology, 34,* 314–318.

Ollendick, T. H. (Ed.). (1998). Empirically supported psychosocial interventions for children [Special issue]. *Journal of Clinical Child Psychology, 27*(2).

Ollendick, T. H. (2003). The role of assessment in evidence-based practice. *Clinical Child and Adolescent Psychology Newsletter, 23,* 1–3.

Ollendick, T. H., & Cerny, J. A. (1981). *Clinical behavior therapy with children*. New York: Plenum Press.

Ollendick, T. H., Davis, T. E., III, & Muris, P. (2004). Treatment of specific phobia in children and adolescents. In P. Barrett & T. H. Ollendick (Eds.), *The handbook of interventions that work with children and adolescents: From prevention to treatment*. West Sussex, England: Wiley & Sons.

Ollendick, T. H., Grills, A.E., & King, N. J. (2001). Applying developmental theory to the assessment and treatment of childhood disorders: Does it make a difference? *Clinical Psychology and Psychotherapy, 8,* 304–314.

Ollendick, T. H., Hagopian, L. P., & King, N. J. (1997). Specific phobias in children. In G. C. L. Davey (Ed.), *Phobias: A handbook of theory, research and treatment* (pp. 201–223). London: John Wiley & Sons Ltd.

Ollendick, T. H., & Hersen, M. (1984). *Child behavioral assessment: Principles and procedures*. New York: Pergamon Press.

Ollendick, T. H., & Hersen, M. (1993). *Handbook of child and adolescent assessment*. Boston: Allyn and Bacon.

Ollendick, T. H., & King, N. J. (1998). Empirically supported treatments for children with phobic and anxiety disorders: Current status. *Journal of Clinical Child Psychology, 27,* 156–167.

Ollendick, T. H., & King, N. J. (2000). Empirically supported treatments for children and adolescents. In P. C. Kendall (Ed.), *Child and adolescent therapy: Cognitive-behavioral procedures* (pp. 386–425). New York: Guilford Press.

Ollendick, T. H., & King, N. J. (2004). Empirically supported treatments for children and adolescents: Advances toward evidence-based practice. In P. Barrett & T. H. Ollendick (Eds.), *The handbook of interventions that work with children and adolescents: From prevention to treatment*. West Sussex, England: Wiley & Sons.

Ollendick, T. H., King, N. J., & Muris, P. (2002). Fears and phobias in children: Phenomenology, epidemiology, and aetiology. *Child and Adolescent Mental Health, 7,* 98–106.

Öst, L. G. (1987). Age of onset in different phobias. *Journal of Abnormal Psychology, 96,* 223–229.

Öst, L. G. (1989). One-session treatment for specific phobias. *Behaviour Research and Therapy, 27,* 1–7.

Öst, L. G. (1997). Rapid treatment of specific phobias. In G. C. L. Davey (Ed.), *Phobias: A handbook of theory, research, and treatment* (pp. 227–247). New York: Wiley.

Öst, L. G., Brandberg, M., & Alm, T. (1997). One versus five sessions of exposure in the treatment of flying phobia. *Behaviour Research and Therapy, 35,* 987–996.

Öst, L. G., Svensson, L., Hellström, K., & Lindwall, R. (2001). One-session treatment of specific phobias in youths: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 69,* 814–824.

Prins, P., & Ollendick, T. H. (2003). Cognitive change and enhanced coping: Missing mediational links in cognitive behavior therapy with anxiety-disordered children. *Clinical Child and Family Psychology, 6,* 87–105.

Rachman, S. (1976). The passing of the two-stage theory of fear and avoidance: Fresh possibilities. *Behaviour Research and Therapy, 14,* 125–131.

Ritter, B. (1965). *The treatment of a dissection phobia*. Unpublished manuscript, Queens College.

Ritter, B. (1968). The group desensitization of children's snake phobias using vicarious and contact desensitization procedures. *Behaviour Research and Therapy, 6,* 1–6.

Sheslow, D. V., Bondy, A. S., & Nelson, R. O. (1983). A comparison of graduate exposure, verbal coping skills, and their combination in the treatment of children's fear of the dark. *Child and Family Behavior Therapy, 4,* 33–45.

Silverman, W. K., Kurtines, W. M., Ginsburg, G. S., Weems, C. F., Rabian, B., & Serafini, L. T. (1999). Contingency management, self-control, and education support in the treatment of childhood phobic disorders: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 5,* 675–687.

Skinner, B. F. (1988). The operant side of behavior therapy. *Journal of Behavior Therapy and Experimental Psychiatry, 19,* 171–179.

Southam-Gerow, M. A., & Kendall, P. C. (2000). A preliminary study of the emotion understanding of youths referred for treatment of anxiety disorders. *Journal of Clinical Child Psychology, 29,* 319–327.

Southam-Gerow, M. A., & Kendall, P. C. (2002). Emotion regulation and understanding: Implications for child psychopathology and therapy. *Clinical Psychology Review, 22,* 189–222.

Task Force on Promotion and Dissemination of Psychological Procedures. (1995). Training in and dissemination of empirically validated psychological treatments: Report and recommendations. *The Clinical Psychologist, 48,* 3–23.

Ultee, C. A., Griffioen, D., & Schellekens, J. (1982). The reduction of anxiety in children: A comparison of the effects of "systematic desensitization in vitro" and "systematic desensitization in vivo." *Behaviour Research and Therapy, 20,* 61–67.

United States Census Bureau. (2000, January). *Projections of the total resident population by 5-year age groups, and sex with special age categories: Middle series, 2001 to 2005.* Retrieved March 3, 2003, from http://www.census.gov/population/projections/nation/summary/np-t3-b.txt

Wolpe, J. (1958). *Psychotherapy by reciprocal inhibition.* Stanford, CA: Stanford University Press.

Woody, S. R., & Ollendick, T. H. (in press). Principles of effective psychosocial interventions with anxiety and its disorders. In L. E. Beutler & L. G. Castonguay (Eds.), *Principles of psychiatric treatment for adults.* Oxford: Oxford University Press.

Received September 22, 2003; revised February 24 and August 17, 2004, and January 12, 2005; accepted January 17, 2005.