
Evidence-Based Behavioral Treatment of Dog Phobia With Young Children: Two Case Examples

Behavior Modification

37(1) 143–160

© The Author(s) 2013

Reprints and permission:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/0145445512458524

http://bmo.sagepub.com



**Anna C. May¹, Brittany M. Rudy¹,
Thompson E. Davis III¹, and
Johnny L. Matson¹**

Abstract

Specific phobias are among the most common anxiety disorders, especially in children. Unfortunately, a paucity of literature exists regarding the treatment of specific phobia in young children, despite the knowledge that traditional techniques (i.e., cognitive-behavioral therapy [CBT]) may not be practical. Therefore, the purpose of this article is to present two case studies that provide empirical support for the evidence-based behavioral treatment of specific phobia with young children (ages 4 and 5 years). Results indicated that following 10 to 13 sessions of graduated exposure therapy using reinforced practice and participant modeling, the children no longer met criteria for clinically significant phobias of dogs. Treatment effects were maintained at 7-month follow-up despite reported lack of practice and/or regular exposure to dogs in the children's daily lives.

Keywords

specific phobia, behavior therapy, young children, evidence-based treatment, case study

¹Louisiana State University, Baton Rouge, USA

Corresponding Author:

Anna C. May, Laboratory for Anxiety, Phobia, and Internalizing Disorder Studies (LAPIS), Department of Psychology, Louisiana State University, 236 Audubon Hall, Baton Rouge, LA 70803

Email: amay3@lsu.edu

Introduction

Specific phobias are among the most common anxiety disorders, especially in children. A specific phobia is an intense fear that interferes with daily life, and there are five possible subtypes: animal, situation, natural environment, blood–injection–injury, and other (*Diagnostic and Statistical Manual of Mental Disorders* [4th ed., text rev.]; *DSM-IV-TR*; American Psychiatric Association [APA], 2000). To receive a diagnosis of a specific phobia, a child must meet six of seven criteria (e.g., intense and enduring fear, exposure leads to anxious response, exposure endured with considerable distress, must interfere significantly, present for 6 months prior, etc.; *DSM-IV-TR*; APA, 2000). Children, however, do not need to display recognition that the fear is excessive or unreasonable. The prevalence of specific phobias in community samples of children is around 5% and around 15% in clinical samples (Ollendick, Hagopian, & King, 1997), and, even in children, the symptoms can be impairing causing difficulties with somatic and anxiety symptoms, life satisfaction, and social skills (Ollendick, Raishevich, Davis, Sirbu, & Öst, 2010). Girls and younger children typically report more fears than boys (Muris, Schmidt, & Merckelbach, 1999; Ollendick, King, & Frary, 1989). The duration of specific phobias is surprisingly long if untreated, more than 20 years (Stinson et al., 2007), and adults with a specific phobia access medical care significantly more often than those with other disorders and at a rate second only to panic disorder (Deacon, Lickel, & Abramowitz, 2008). Therefore, it is very important to diagnose and treat this disorder as early as possible.

Behavioral and cognitive-behavioral treatments have been found to have the most empirical support for the treatment of specific phobias in children and adolescents (Davis, May, & Whiting, 2011). These treatments include systematic desensitization, reinforced practice (RP), participant modeling (PM), and cognitive-behavioral therapy (CBT). However, the lowest age for many of the trials used to determine the evidence base was 7 years (Cornwall, Spence, & Schotte, 1996; Ollendick, Öst, et al., 2009; Öst, Svensson, Hellstrom, & Lindwall, 2001); to date, little to no research has lent empirical support to the treatment of specific phobia in younger children.

Treatments for Young Children

Little literature exists regarding the treatment of specific phobia in young children, despite knowledge that traditional techniques (i.e., CBT) may not be practical. Fears in toddlers are highly concrete (Gullone, 2000), and therefore, the cognitive aspects of CBT (e.g., altering schemas, cognitive distortions; see

Kendall, 1993) are beyond the developmental capabilities of young children. Consistent with this, studies showing the efficacy of CBT are typically treating children 7 years of age or older (e.g., Barrett, 1998; Barrett, Dadds, & Rapee, 1996; Flannery-Schroeder & Kendall, 2000; Kendall, 1994; Muris, Meesters, & van Melick, 2002; Nauta, Scholing, Emmelkamp, & Minderaa, 2003). Two behavioral treatments, however, would seem likely techniques for use with young children: PM and RP.

PM is an efficacious treatment for fears in children (Ritter, 1968). PM involves the child observing another individual interacting successfully in a nonfearful way with the feared stimulus so new, competing learning about the feared stimulus can occur (Bouton, 2004). PM also requires having the child then interact with the model and the stimulus to build skills and successfully interact with the feared stimulus with verbal and physical guidance from the model. Research utilizing PM successfully with children has used fearful and nonphobic samples (Murphy & Bootzin, 1973). Modeling is also useful in young children because developmentally, young children mimic trusted adults and tend to cling to adults in fearful situations. Watching the clinician interact with the stimulus in a positive way and being guided through the interaction helps them learn the less fearful response and slowly teaches them to be more confident around the stimulus by providing a new learned experience (Bandura, 1969; Bouton, 2004; Myers & Davis, 2002).

RP (also known as contingency management) was described by Leitenberg and Callahan (1973) as a combination of four variables found to be successful in the treatment of phobias: repeated graduated approach toward phobic stimuli and situations, reinforcement of small gains in approaching phobic stimuli and situations, feedback measuring performance, and explicit instructions and expectations. These components are still thought of as comprising RP today (Davis & Ollendick, 2005). RP is likely to be especially useful with younger populations, as reinforcement is one of the most commonly used techniques for behavior modification with this population (Hirshfeld-Becker & Biederman, 2002; Hirshfeld-Becker et al., 2008). As the child progresses up the fear hierarchy, RP provides incentive to keep going. The fear is extinguished leading to a reduction in avoidant behavior and an increase in approach behavior through the use of operant conditioning (Davis & Ollendick, 2005).

Present study

Due to the paucity of empirical support for the treatment of fears in very young children, the authors chose to examine purely behavioral interventions, combining RP and PM techniques, to treat two young children with

specific phobias of dogs (i.e., animal type). These behavioral techniques were specifically chosen because they have been demonstrated as important parts of empirically supported integrated treatments of clinical and subclinical fears in children and adolescents (Davis, 2009; Davis & Ollendick, 2005; Silverman et al., 1999). Furthermore, based on the previous research, it was thought that elements of PM would be useful with younger children and that reinforcers might be necessary to induce the children to observe the modeling as well as continue practicing and interacting with the stimulus. It was hypothesized that the use of behavioral techniques would reduce dog fear in both children to below clinical levels.

Current Case Studies

Background Information and Reason for Referral

Case 1. Sam (not his real name) was a 4-year-old Caucasian male who was referred to our outpatient child clinic by his mother for a problematic fear of dogs. Sam lived with his biological mother. Sam attended preschool at a local private school during the time of assessment and treatment. Intellectual functioning was not formally assessed; however, no developmental delay was reported and no gross deficits in intellectual or adaptive functioning were noted. Sam's mother denied any current or past medical difficulties, and Sam was not reportedly prescribed any medications during the time of assessment and treatment.

At 3 years of age, Sam was reportedly charged by the dog of a new neighbor. The dog was larger than him in size and frightened him severely. Following that experience, Sam's mother reported that he experienced an increased fear of dogs, which reportedly generalized to all sizes. At the time of the initial assessment, Sam's mother reported that Sam would become fearful at hearing a dog bark, would not go into his backyard without first checking to see whether the neighbor's dog was outside or not (behind a fence), would limit his time outside due to fear of encountering a dog, and would no longer visit friends and family who owned dogs. Sam reportedly froze and shook in the presence of dogs, hid behind his mother, and on one occasion, even reportedly urinated on himself.

Case 2. Cindy (not her real name) was a 5-year-old Caucasian female who was referred to the clinic by her father for a fear of dogs. Cindy lived with her biological father and mother and her younger sister. Cindy was attending Kindergarten at a local private school during the time of assessment and treatment. Although intellectual functioning was not formally assessed, no developmental

delay was reported and no gross deficits in intellectual or adaptive functioning were noted. Furthermore, Cindy's father denied any current or previous medical difficulties. Cindy was not reportedly prescribed any medications during the time of assessment and treatment.

Cindy reportedly developed her fear of dogs over several experiences of being chased by a small dog between the ages of 3 and 5 years. Her fear was exacerbated after she learned that her mother was bitten by a small dog in her neighborhood approximately 6 months prior to the initial assessment session. At the time of the assessment, Cindy was reportedly avoiding visiting the homes of friends and family due to the presence of dogs and was limiting her playtime outside in circumstances where dogs might be present. Cindy reportedly demonstrated interest in dogs and expressed a desire to pet them; however, she would not approach dogs on her own and would run from a dog and/or ask to be held if a dog was near her. She also reportedly cried or screamed if a dog approached her or if she was made to be around a dog more quickly than she would like.

Assessment and Diagnosis

Materials

Anxiety Disorders Interview Schedule: Parent Schedule (ADIS-IV:P). The ADIS-IV:P (Silverman & Albano, 1996) is a semistructured diagnostic interview designed to aid the clinician in determining the presence, severity, and significance of anxiety and other emotional concerns and/or behavioral difficulties in children and adolescents. Information is obtained from parents concerning their child's anxiety symptoms, fear, avoidance, distress, and overall interference. Ratings of distress/fear and interference are obtained on a 0 to 8 scale (i.e., 0 is *no fear*) allowing the clinician to assign a clinician severity rating (CSR) for each potential diagnosis. CSR ratings of 4 or greater are considered to indicate clinically significant levels of impairment. Kappa coefficients between pairs of raters for all diagnostic subcategories have been found to be in the *good* to *excellent* range (.52-.94) for the parent interview (Silverman, Saavedra, & Pina, 2001). Agreement across studies in the lab for the presence or absence of specific phobia is 100%.

Child Behavior Checklist (CBCL) for ages 1½ to 5 years. The CBCL (Achenbach, 1991) is a 100-item broadband parent report measure that examines a variety of emotional and behavioral problems for children ages 1½ to 5 years of age. The CBCL produces one Total Problems scale, two broad ratings of internalizing and externalizing problems, and eight additional symptom subscales. Items are rated from 0 (*not true*) to 2 (*very true*). Scores at or above the 98th

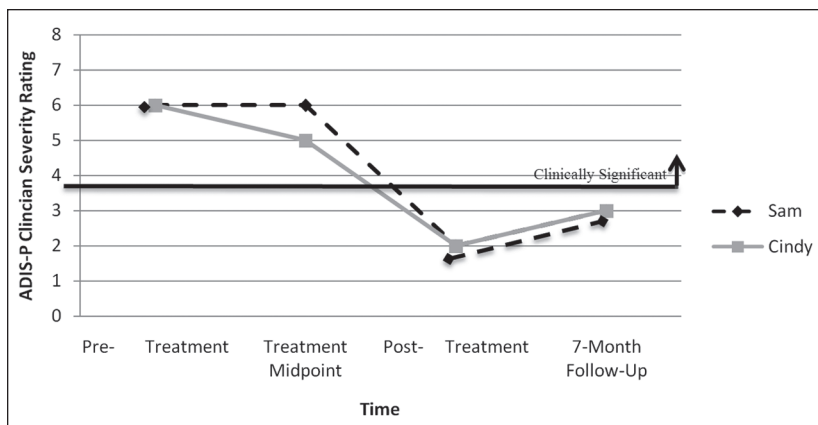


Figure 1. Dog phobia diagnostic severity over treatment course for Sam and Cindy

Note: ADIS-IV:P = Anxiety Disorders Interview Schedule: Parent Schedule.

percentile are considered clinically significant. For the purposes of this study, the Internalizing, Externalizing, and Total Problems scales were utilized. Cronbach's alpha has been found to be .91 for the Internalizing scale and .85 for the Externalizing scale (Achenbach, 1991).

Assessment Procedure and Diagnostic Outcomes. Following approval from the Institutional Review Board at the affiliated university, each of the two clients was recruited through the university clinic for assessment and treatment, initially seeking help through a larger child phobia treatment study (for which they were too young). Informed consent was obtained from each child's accompanying parent at the beginning of the assessment session and child assent was obtained. A semistructured interview was conducted with the referring parent (i.e., Sam's mother and Cindy's father) of each child without the child present. The parent also completed the CBCL. During the interview, information was gathered to ensure the presence of a diagnosable specific phobia of dogs. Both children met *DSM-IV-TR* criteria for Specific Phobia—Animal Type (dog). Assessments and treatment were conducted by postmasters doctoral graduate students in an APA-accredited clinical psychology program.

As depicted in Figure 1, at the pretreatment assessment, ADIS-IV:P CSRs indicated that both children experienced a clinically significant fear of dogs. Based on information provided by Sam's mother, a CSR of 6 for Sam's phobia of dogs was warranted; however, it should be noted that no other psychological

problems were indicated during the interview and no clinical elevations were indicated by Sam's mother for broad psychopathology (i.e., on the Internalizing, Externalizing, or Total Problems scales of the CBCL). Based on information provided by Cindy's father, a CSR of 6 for Cindy's phobia of dogs was warranted. Cindy's father also indicated that Cindy experienced a significant fear of receiving injections (CSR = 4) and a subclinical fear of bees and flying insects (CSR = 3). Similar to Sam, Cindy's father indicated no clinical elevations for broad psychopathology on the CBCL.

Treatment Plan

To implement RP, the clinician must determine what factors are maintaining the fear and avoidant behavior, as well as variables affecting the fear so that a fear hierarchy can be made, through a functional assessment. Clinicians must determine what reinforcers will be useful to the child as well as increasingly potent reinforcers for increasingly difficult exposures (Davis & Ollendick, 2005). Following these guidelines, at the end of the first session, the treating clinician worked with each child's parent to construct a detailed fear hierarchy for Sam and Cindy and identify potential reinforcers in preparation for treatment. Once the fear hierarchy and reinforcers were established, the child progressed through the hierarchical exposures gradually while the clinician used behavioral techniques such as shaping, reinforcement, and verbal feedback (Ollendick, Davis, & Muris, 2004). As the child became less fearful and progressed with the exposures, reinforcers were delivered less frequently and the steps to achieve them were made more difficult. For difficult exposure steps, clinicians were instructed to use PM. The sequence started with modeling a successful interaction with the feared stimulus, followed by physical and verbal guidance of the child interacting with the feared stimulus, ending with a slow fading away of the guidance until the child could complete the interaction successfully without assistance. Treatment utilizing graduated exposure with RP and PM techniques began for Sam and Cindy during the second session with the child, parent, treating clinician, and any assisting clinicians present (e.g., someone to hold a dog on the leash). Sam participated in 10 therapy sessions and Cindy participated in 13 therapy sessions.

Treatment Course

RP with graduated in vivo exposure was utilized for treatment with each child in a similar fashion. A PM component was also included throughout each therapy session with the primary clinician, parent, and assisting clinicians

(e.g., dog holders) acting as models for each task requested of the child. The fear hierarchy, which was created during the initial assessment session, was utilized to individualize each treatment session for each child. A reinforcement structure was adapted for each session based on the fear hierarchy and the overall session plan. For instance, the child might be informed that he or she would receive a sticker after completion of each prompted step or sub-step. After three stickers, the child might then receive a small prize. At the end of the session, if the child received 10 to 12 stickers, a slightly larger prize might be awarded. The accompanying parent generally provided the larger prizes while small prizes and stickers were awarded from the clinic. The reinforcement structure was individualized by child and by session; however, the overall premise of reinforcement remained standardized according to RP protocol. Stickers, small prizes, and the larger prize at the end of each session were given only after each requested task was successfully completed and were not awarded if the child did not complete the task. The large reinforcer for each child at the end of the final session was somewhat larger to reflect the accomplishments of each child throughout therapy (e.g., a large, dog-shaped stuffed animal).

Each of the two children began treatment based on his or her individualized fear hierarchy. Each time the child would habituate to a particular dog, the next most challenging type of dog or interaction (as indicated in the individualized fear hierarchy) would be used for the following session. For example, in Sam's case, interacting with the dog by petting it while held on a leash was easier than playing ball (because the dog was loose and approached the child in a more energetic manner). The children graduated up their individualized fear hierarchies in this way. Subsequent sessions continued in a similar fashion using graduated exposure, modeling, and rewards for each completed task. See Tables 1 and 2 for more detailed qualitative data on each session for both children. In total, five dogs were used with each child (i.e., a small, calm dog; a small, energetic dog; a midsize calm dog; a large, somewhat energetic dog; and a small but extremely hyperactive dog). Sessions were conducted within the therapy room or outside in a courtyard near the clinic for generalization purposes. During the second to last session for Sam and the last three sessions for Cindy, therapy was conducted at a local dog park. Permission was obtained from the parent who accompanied the child and the clinician to the park.

Reinforcement Structure. During Session 1, Sam was prompted to watch a medium-sized dog through the therapy room window with the primary clinician while his mother and an assisting clinician modeled interaction with the

Table 1. Clinical Descriptions of Cindy's Treatment Progression

Session number	Location	Type of dog	Clinical observations
1	Clinic	Small dog	Pet the dog while it was held, fed it treats when held, scared when dog was loose
2	Clinic	Small dog	Played ball with dog off the leash by the end of the session
3	Clinic	Small dog	Allowed dog to be off the leash sooner, played ball with the dog while on the floor, let the dog lick her
4	Clinic	Medium dog	Let it off the leash, pet, played ball, gave treats (all without dad in the room), was apprehensive when the dog became more rambunctious
5	Clinic	Small hyper dog	Dog was barking, so moved slower through steps (e.g., petting, playing), dad taught not to comfort/reinforce her for fear too much
6	Clinic	Small hyper dog	Stayed in a vacation house with a dog that she could pet and walk around, in session moved through steps faster (e.g., petting, playing,), still cautious, fed the dog a treat at the end with no leash but she remained in dad's lap
7	Clinic	Small hyper dog	No dad present, able to get on the floor with the dog and feed it treats, pet it, and practice having it bark; handled fear better
8	Clinic	Small hyper dog and large dog	Adjusted to small dog quickly and was less anxious when the dog barked, the session moved quickly when introduced to the large dog, pet and played with it, had trouble walking around and wanted to hold the therapist's hand or shirt
9	Dog park	NA	Hesitant with new dogs but played with a known dog at the edge of the park and worked on moving to the center, walked by herself for approximately 50 ft
10	Dog park	NA	Stood on her own and approached new dogs to pet, had a dog jump on her and had difficulty calming down or standing alone after, father picked up child despite clinician's request not to do so

(continued)

Table 1. (continued)

Session number	Location	Type of dog	Clinical observations
11	Dog park	NA	Responded well to known dogs, nervous around new dogs, distressed a few times (e.g., dog jumped on her) but able to recover and calm down and complete the tasks at the park (e.g., approached dogs, walked by herself)
12	Dog park	NA	Grabbed therapist's leg when new dog approached in the beginning, petted multiple dogs on her own, did well practicing tasks (approaching, petting dogs) with dad, and did not request to be held
13	Clinic	Small hyper dog and medium dog	Approached two dogs on her own before session; in session, was able to complete tasks at the dog park (e.g., approach dogs, walk by herself)

dog outside. For Sam, in the first session, he received a sticker for every 2 min of watching the dog and for every four stickers he received a prize. He received two larger prizes at the end of the session. In the next few sessions, he was reinforced with stickers and verbal praise for entering the room and for each subsequent task the therapist requested, in the following order—get incrementally closer until beside the dog, pet the dog with therapist help, pet the dog unassisted, feed the dog a treat, and throw a ball to the dog. By the third session, Sam requested to give stickers to the dog for behaving as well. Because Sam found more enjoyment in giving the dog stickers for his completed tasks, this was allowed. If Sam completed his tasks during a session, he would receive a larger prize at the end. In two of the later sessions, Sam did not receive stickers throughout to fade reinforcement out, but a larger animal puppet was promised at the end if he completed all of his tasks, and he was able to do this with no problem. Sam also received toy wristbands for the last dog park session.

For Cindy, during Session 1, a small calm dog was crated and placed in the main therapy room, and she received stickers, small prizes, and verbal praise for completing prompts such as entering the room, approaching the crate, and touching the dog through the crate. During the following session, a slightly

Table 2. Clinical Descriptions of Sam's Treatment Progression

Session number	Location	Type of dog	Clinical observations
1	Clinic	Medium dog	Colored pictures of dogs and watched dog through a window; watched mom and clinician play with dog
2	Clinic	Large dog and small dog	Watched large dog through window and agreed to enter the room; got close to dog when therapist, mom, and dog all sat around dog; also got close to small dog and was able to touch therapist's hand while therapist touched the dog (participant modeling)
3	Clinic	Small dog	Excited to see the dog, pet the dog quickly with mom and therapist modeling, threw ball to dog but became anxious when dog became rambunctious, able to stay in room and play ball, walked around with dog loose away from his mother and therapist, and petted the dog
4	Clinic	Small dog	Approached, petted, talked to, and walked dog by himself and without mother present; stayed in room with dog loose; sat next to and pet the dog repeatedly for an extended period
5	Clinic	Medium dog	Played ball with the dog, petted the dog, gave the dog treats, walked the dog by himself outside, and walked around in room with the dog loose
6	Clinic	Medium dog	Petted, walked, and allowed dog to lick his hand; touched the dog's nose a few times; let the dog wander the room while client stood on the floor
7	Clinic	Medium dog	Held hand to dogs face to lick, acclimated faster, fed dog treats, played ball, let dog lick his hands, petted dog, walked and played ball with dog outside, mother not there for most of session
8	Clinic	Small hyper dog	Got on floor with dog quickly and held out his hand for licks, petted dog and walked around with dog loose, role-played an encounter with dog outside therapy session, was very comfortable with dog at the end of the session

(continued)

Table 2. (continued)

Session number	Location	Type of dog	Clinical observations
9	Dog park	NA	Client told therapist immediately he was not afraid and was able to approach many dogs and pet them with no problem
10	Clinic	Medium dog	Mother told therapist that client kept asking to go to the dog park and played ball with two small dogs at a party; in session, he played with the large dog, did not seem anxious, let dog lick him, and fed dog treats

more energetic small dog was placed on a tight leash at the opposite end of the therapy room. Exposure steps included letting the leash out slowly, approaching the dog, playing ball with the dog from across the room, and moving closer to the dog. The clinician or the parent modeled each task and Cindy was prompted to complete the task. Reinforcement was given in the form of praise, stickers, and small prizes following completion of the task. For Cindy, the small reinforcer was changed to small candies for the first two dog park sessions and trendy wristbands for the next two dog park sessions. For Cindy's last session, a plush puppy stuffed animal was the reinforcer for completion of tasks.

Evaluating Outcome

A midpoint assessment was conducted following the fourth treatment session by a separate clinician who was blind to treatment progress. This assessment included readministration of the specific phobia module of the ADIS-IV:P as well as recompletion of the CBCL (see Figure 1). At the midpoint assessment, Sam's mother indicated that Sam was still experiencing significant distress and interference related to his fear of dogs. Information provided indicated that Sam's fear remained severe (CSR = 6). Cindy's father also indicated the continued presence of significant impairment related to her fear of dogs. Information provided indicated that a CSR of 5 was warranted for Cindy's phobia of dogs. Furthermore, Cindy's fears of injections (CSR = 4) and bees/flying insects (CSR = 3) remained stable. CBCL ratings provided by each child's parent were still not clinically elevated in any area.

A posttreatment assessment was conducted 1 day following the end of treatment for each child (also utilizing a blind assessor). Treatment lasted 3 months for Sam and 4 months for Cindy. After the completion of 10 weekly sessions of RP with in vivo exposure, Sam's mother indicated a significant decrease in Sam's fear of dogs. According to information provided by his mother on the phobia section of the ADIS interview, Sam's fear was no longer clinically significant ($CSR = 2$).

Following 13 weekly sessions of RP with in vivo exposure, Cindy's father similarly indicated that Cindy no longer met criteria for a significant fear of dogs ($CSR = 2$). Cindy's fears of receiving injections ($CSR = 4$) and bees/flying insects ($CSR = 3$) continued to remain stable. Because both children's parents were unable to come back to the clinic for post-treatment and follow-up, the assessments were conducted by telephone interview and thus parent ratings of broad psychopathology (i.e., CBCL) were not obtained; however, in all previous assessments, no clinical or subclinical elevations of psychopathology were noted on the CBCL. Both children were reportedly able to interact successfully with multiple types of dogs without significant impairment or distress post-treatment as reported by parents using follow-up ADIS interviews of the phobia section conducted by telephone.

At approximately 7 months post-treatment, Sam's mother was contacted via phone for a follow-up interview by the postassessment clinician using the ADIS-IV:P specific phobia module. According to his mother, Sam's fear of dogs remained subclinical ($CSR = 3$), despite Sam's mother's report that practice was not consistent and that Sam continued to have limited contact with dogs in his daily life. Cindy's father was also contacted 7 months post treatment completion, and he provided the following information: Cindy reportedly did not have regular contact or practice with dogs; however, her fear remained subclinical ($CSR = 3$; see Figure 1). Further information regarding Cindy's fears of injections and bees/flying insects was unable to be obtained due to time/procedural constraints. The parent of each child was offered information about subsequent booster sessions; however, both parents declined further treatment at that time, stating that it was unnecessary.

Conclusions and Implications for Practice

The purpose of the present case studies was to demonstrate the utility of behavioral treatments for specific phobia in young children. It was hypothesized that since behavioral techniques are efficacious when treating phobias (Davis et al., 2011; Davis & Ollendick, 2005; Hirshfeld-Becker & Biederman, 2002; Hirshfeld-Becker et al., 2008; Ritter, 1968) and young children do not

have the cognitive developmental capacity to understand the cognitive aspects of CBT, RP with PM (behaviorally focused treatments) would significantly reduce fears in two young children. Results indicated that in two separate cases, children ages 4 and 5 years demonstrated meaningful clinical improvement over 10 to 13 sessions of exposure therapy using RP and PM techniques. Because the duration of specific phobias can be long (Stinson et al., 2007), and costly as adults with a specific phobia access medical care significantly more often than those with other disorders (Deacon et al., 2008), being able to successfully treat phobias at a young age is not only useful but important to increasing the quality of life and decreasing the financial burden of those suffering from phobias. These results demonstrate that behavioral techniques may be an efficacious, viable, and cost-effective form of treatment for young children. In both of these cases, watching parent and therapist models have positive interactions with the dogs and being guided through their own interaction did help them learn less fearful responses and taught them to be more confident around dogs by providing new learned experiences (Bandura, 1969; Bouton, 2004; Myers & Davis, 2002). The authors did find that as the children progressed up the fear hierarchy, RP provided incentive to keep going. The fear was reduced and led to a reduction in avoidant behavior, even excitement and an increase in approach behavior through the use of operant conditioning (Davis & Ollendick, 2005). Furthermore, both RP and PM were fairly easy to administer in a clinic setting, and because young children respond positively to relatively small reinforcers (e.g., stickers, wristbands, praise, activities), the treatment was cost-effective.

Like all studies, however, this study was not without limitations. ADIS-IV:P severity rankings were used as the outcome measure to determine treatment progress. Additional measures, however, might have yielded more information on clinical status at post-treatment and follow-up (i.e., CBCL). In addition, it is noted that the steps for completion of the fear hierarchy, session structure, and administration of reinforcers was not completely standardized between cases. The exposure techniques, modeling, and reinforcement principles remained consistent and informed by previous literature throughout each session, but amount and frequency varied as necessary to individualize and maximize treatment for each child. It was thought best to individualize the treatment for client needs and provide the most effective and timely services as possible as a true implementation of evidence-based practice in a clinic setting. Another limitation is due to the focus of the clinicians on individualized clinical application of these techniques, strict behavioral data were not recorded beyond observational notes. The assessments were done at time points and thus we know at the mid-point assessment there was not a clinically significant change yet there was

clinically significant change by the end of treatment. Because of this method of obtaining data, it is hard to determine when significant change started to take place though it was most likely a gradual process. Thus, in the future, a more standardized approach obtaining more behavioral data in assessment, treatment monitoring, and outcome evaluation would be useful.

Even with these limitations, this study demonstrated the efficacy of behavioral techniques (i.e., RP and PM) in treating fears in very young children. The paucity of literature in the treatment of young children with fear and anxiety makes it difficult for clinicians to help these youngsters, and purely behavioral techniques such as RP and PM have been largely ignored as of late, even given their earlier impact and promising findings (e.g., Leitenberg & Callahan, 1973; Murphy & Bootzin, 1973). An increase in research with younger populations is needed to determine treatments that are viable, cost-effective, and efficacious for very young children. As well, the long-term course of intervention at such a young age is an important issue to consider. Although therapeutic benefits were maintained at 7-month follow-up in the current cases, challenges may emerge at a later date. Specifically, parents and clinicians may need to incorporate booster sessions or additional techniques or sessions later in life, especially for fears that reoccur or are refractory (e.g., Davis, Ollendick, & Öst, 2012; Ollendick, Davis, & Sirbu, 2009).

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

- Achenbach, T. M. (1991). *Integrative guide for the 1991 CBCL/4-18, YSR, and TRF profiles*. Burlington: Department of Psychiatry, University of Vermont.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Bandura, A. (1969). *Principles of behavior modification*. New York, NY: Holt, Rinehart & Winston.
- Barrett, P. (1998). Evaluation of cognitive-behavioral group treatments for childhood anxiety disorders. *Journal of Clinical Child Psychology*, 27, 459-468.
- Barrett, P., Dadds, M., & Rapee, R. (1996). Family treatment of childhood anxiety: A controlled trial. *Journal of Consulting and Clinical Psychology*, 64, 333-342.

- Bouton, M. (2004). Context and behavioral processes in extinction. *Learning & Memory*, 11, 485-494.
- Cornwall, E., Spence, S., & Schotte, D. (1996). The effectiveness of emotive imagery in the treatment of darkness phobia in children. *Behaviour Change*, 13, 223-229.
- Davis, T. E., III. (2009). PTSD, anxiety, and phobias. In J. Matson, F. Andrasik, & M. Matson (Eds.), *Treating childhood psychopathology and developmental disorders* (pp. 183-220). New York, NY: Springer Science and Business Media, LLC.
- Davis, T. E., III., May, A. C., & Whiting, S. E. (2011). Evidence-based treatment of anxiety and phobia in children and adolescents: Current status and effects on the emotional response. *Clinical Psychology Review*, 31, 592-602.
- Davis, T. E., III., & Ollendick, T. H. (2005). A critical review of empirically supported treatments for specific phobia in children: Do efficacious treatments address the components of a phobic response? *Clinical Psychology: Science and Practice*, 12, 144-160.
- Davis, T. E., III., Ollendick, T. H., & Öst, L. G. (Eds.). (2012). *Intensive one-session treatment of specific phobias*. New York, NY: Springer Science and Business Media, LLC.
- Deacon, B., Lickel, J., & Abramowitz, J. S. (2008). Medical utilization across the anxiety disorders. *Journal of Anxiety Disorders*, 22, 344-350.
- Flannery-Schroeder, E., & Kendall, P. (2000). Group and individual cognitive-behavioral treatments for youth with anxiety disorders: A randomized clinical trial. *Cognitive Therapy and Research*, 24, 251-278.
- Gullone, E. (2000). The development of normal fear: A century of research. *Clinical Psychology Review*, 20, 429-451.
- Hirshfeld-Becker, D. R., & Biederman, J. (2002). Rationale and principles for early intervention with young children at risk for anxiety disorders. *Clinical Child and Family Psychological Review*, 5, 161-172.
- Hirshfeld-Becker, D. R., Mosek, B., Henin, A., Blakely, L. R., Rettew, D. C., Dufton, L., . . . Biederman, J. (2008). Cognitive-behavioral intervention with young anxious children. *Harvard Review of Psychiatry*, 16, 113-125.
- 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. (1994). Treating anxiety disorders in children: Results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology*, 62, 100-110.
- 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.
- Muris, P., Meesters, C., & van Melick, M. (2002). Treatment of childhood anxiety disorders: A preliminary comparison between cognitive-behavioral group therapy and a psychological placebo intervention. *Journal of Behavior Therapy and Experimental Psychiatry*, 33, 143-158.

- 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.
- Myers, K., & Davis, M. (2002). Behavioral and neural analysis of extinction. *Neuron*, 36, 567-584.
- Nauta, M., Scholing, A., Emmelkamp, P., & Minderaa, R. (2003). Cognitive-behavioral therapy for children with anxiety disorders in a clinical setting: No additional effect of a cognitive parent training. *Journal of the American Academy of Child & Adolescent Psychiatry*, 42, 1270-1278.
- 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* (pp. 273-299). West Sussex, UK: John Wiley.
- Ollendick, T. H., Davis, T. E., III., & Sirbu, C. V. (2009). Specific phobias. In D. McKay & E. Storch (Eds.), *Cognitive behavior therapy for children: Treating complex and refractory cases* (pp. 171-199). New York, NY: Springer Science and Business Media, LLC.
- 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, England: John Wiley.
- Ollendick, T. H., King, N. J., & Frary, R. B. (1989). Fears in children and adolescents: Reliability and generalizability across gender, age, and nationality. *Behaviour Research and Therapy*, 27, 19-26.
- Ollendick, T. H., Öst, L. G., Reuterskiöld, L., Costa, N., Cederlund, R., Sirbu, C., . . . Jarrett, M. (2009). One-session treatment of specific phobias in youth: A randomized clinical trial in the USA and Sweden. *Journal of Consulting and Clinical Psychology*, 77, 504-516.
- Ollendick, T. H., Raishevich, N., Davis, T. E., III., Sirbu, C. V., & Öst, L. G. (2010). Specific phobia in youth: Phenomenology and psychological characteristics. *Behavior Therapy*, 41, 133-141.
- Öst, L. G., Svensson, L., Hellstrom, 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.
- Ritter, B. (1968). The group desensitization of children's snake phobias using vicarious and contact desensitization procedures. *Behaviour Research and Therapy*, 6, 1-6.
- Silverman, W. K., & Albano, A. M. (1996). *The Anxiety Disorders Interview Schedule for DSM-IV: Child and parent versions*. San Antonio, TX: Psychological Corporation.
- Silverman, W. K., Kurtines, W., Ginsburg, G., Weems, C., 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*, 67, 675-687.

Silverman, W. K., Saavedra, L., & Pina, A. (2001). Test-retest reliability of anxiety symptoms and disorders with the Anxiety Disorders Interview Schedule for *DSM-IV*: Child and parent versions. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40, 937-944.

Stinson, F. S., Dawson, D. A., Chou, S. P., Smith, S., Goldstein, R. B., Ruan, W. J., & Grant, B. F. (2007). The epidemiology of *DSM-IV* specific phobia in the USA: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychological Medicine*, 37, 1047-1059.

Bios

Anna C. May is a fourth-year doctoral student in the Clinical Psychology Program at Louisiana State University under the mentorship of Thompson E. Davis, III, PhD. Her research and clinical interests focus on children with anxiety and other internalizing disorders, the somatization of anxiety, as well as chronic illness and anxiety.

Brittany M. Rudy is on a pre-doctoral internship as a fifth-year doctoral student in the Clinical Psychology Program at Louisiana State University under the mentorship of Thompson Davis, III, PhD. Her research and clinical interests focus on children with anxiety and other internalizing disorders, and the intersection of anxiety and autism spectrum disorders.

Thompson E. Davis III is an associate professor of Clinical Psychology at Louisiana State University. He has authored more than 40 publications (most on child phobia and anxiety), is an associate editor for *Research in Autism Spectrum Disorders*, and is on the editorial board of the *Journal of Anxiety Disorders*.

Johnny L. Matson is founding editor and editor-in-chief of *Research in Autism Spectrum Disorders* and *Research in Developmental Disabilities*, and has authored more than 600 publications. He is a professor and distinguished research master, and director of clinical training in the Department of Psychology at Louisiana State University.