Efficacy of Modular Cognitive Behavior Therapy for Childhood Anxiety Disorders

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The present investigation evaluated the initial efficacy of a modular approach to cognitive behavior therapy (CBT) for anxiety disorders in youth. Modular CBT consists of the guided combination of individually scripted techniques that are explicitly matched to the child's individual strengths and needs. Eleven youth primarily of Asian and Pacific Island ethnicity ranging in age from 7 to 13 were referred for treatment. Comparisons in a multiple baseline across children provided preliminary support for the efficacy of the intervention. Among the 7 completers, all principal diagnoses were absent at posttreatment and 6-month follow-up assessments, and measures of anxiety symptoms and life functioning almost uniformly evidenced clinically significant improvements.

Anxiety disorders are the most commonly diagnosed psychiatric disorders in children and adolescents (Albano, Chorpita, & Barlow, 2002; Bernstein & Borchardt, 1991), frequently presenting with other comorbid anxiety, depressive, or externalizing disorders (Albano et al., 2002; Keller et al., 1992). Anxiety disorders are often characterized by an early onset in childhood or adolescence. Without proper treatment they may worsen over time (Albano et al., 2002; Kendall, 1994) and lead to long-term negative consequences for adult functioning (Kendall, 1992; Ollendick & King, 1994). Accordingly, much effort has been focused on the development of treatments for anxiety disorders in youth.

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The majority of research supports the use of behavioral and cognitive behavioral interventions as efficacious strategies for treating anxiety disorders in youth (Ollendick & King, 1998). Numerous between-group design investigations examining cognitive behavior therapy (CBT) for anxiety disorders have demonstrated superior treatment effects for CBT compared with no-treatment or wait-list control conditions (Barrett, Dadds, & Rapee, 1996; Cobham, Dadds, & Spence, 1998; Kendall, 1994; Kendall et al., 1997; Silverman et al., 1999). In addition, research has demonstrated that many benefits exist with the use of manualized cognitive behavioral treatments for anxiety disorders in youth, including higher rates of systematic delivery and more accurate implementation of treatment components (e.g., Kendall, Kane, Howard, & Siqueland, 1990). Research conducted on the efficacy of manualized CBT for anxiety disorders has established the benefits of this approach in several randomized clinical trials (Barrett et al., 1996; Dadds, Heard, & Rapee, 1992; Kendall, 1994; Kendall et al., 1997).

Despite this accumulation of support, Ollendick (2000) noted that a proportion of children treated with manualized CBT approaches nevertheless fail to show symptomatic improvement. For example, Kendall et al. (1997) found, in comparing CBT with a wait-list control condition, that 47% of children in the experimental condition still received their initial diagnosis at posttreatment evaluations. In another investigation comparing manual-based CBT to a wait-list control condition, Barrett et al. (1996) found that 43% of children in the CBT condition were not diagnosis free at posttreatment. Although diagnostic remission rates above 50% are among the most impressive in child outcome research, it is important to consider whether this ceiling could be raised further through continued adaptations of CBT protocols (e.g., Hudson, Krain, & Kendall, 2001).

As argued by Ollendick (2000), one possible means of addressing such issues may lie in the application of CBT procedures in a more highly individualized manner (e.g., Hudson et al., 2001). However, this strategy must be balanced against the evidence that lack of structure in a protocol can compromise integrity and lead to poorer outcomes (Wilson, 1996). Fortunately, research in childhood anxiety is beginning to outline a framework by which to allow substantial individualization while adhering to a structured protocol. Such efforts, sometimes referred to as prescriptive treatment approaches, have been examined among children diagnosed with generalized anxiety disorder (GAD; Eisen & Silverman, 1998), as well as among children exhibiting school-refusal behaviors (Kearney & Silverman, 1990). For example, Eisen and Silverman (1998) applied one treatment approach for children with primarily cognitive features of GAD, and a different approach for children presenting with primarily somatic symptoms of GAD and found that treatments prescribed or matched with client characteristics resulted in greater improvements over a shorter duration of time (Eisen & Silverman, 1998). Similar findings were obtained in a related examination of the prescriptive treatment of anxiety-disordered youth demonstrating school-refusal behavior (Kearney
Finally, Ollendick (2000) reviewed evidence that among children who failed to respond to manualized CBT approaches, one half to two thirds showed gains at posttreatment once more individually tailored treatment practices were utilized in treatment (cf. Hudson et al., 2001).

Given such considerations, the treatment manual in the current investigation (Modular CBT; Chorpita, 1998) was designed to capitalize on observations that treatments for childhood anxiety disorders and comorbid conditions are comprised of a largely homogeneous set of behavioral and cognitive techniques that have been investigated in over 40 years of empirical research (Ollendick & King, 1998). The current manual employs a "modular" approach to treatment that is aimed at preserving the benefits of standardization inherent in manualized protocols while allowing high levels of flexibility through the use of a guiding algorithm for the application of individual treatment techniques (see Figure 1). The Modular CBT protocol consists of 13 individual treatment techniques (modules) that include self-monitoring, psychoeducation, exposure, cognitive restructuring, social skills training, rewards, differential reinforcement strategies, time-out, and maintenance and relapse prevention. The assembly of these codified techniques is determined by individual needs of the child and family. The present study aimed to test the initial efficacy of the Modular CBT protocol in a multiple baseline across children, with the prediction that the CBT approach would lead to sustained improvements in anxiety symptoms, diagnosis, and functioning.1

**Method**

**Measures**

*Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P).* Diagnoses were derived using the ADIS-IV-C/P (Silverman & Albano, 1996). The ADIS-IV-C/P is a semistructured diagnostic interview for children between the ages of 7 and 17, designed for the assessment and diagnosis of *DSM-IV* diagnoses of childhood anxiety, mood, behavioral, and attentional disturbances. The interview is administered separately

1There are some points of difference between designs that start all participants simultaneously versus those that enroll participants sequentially. These have been termed in the literature a "simultaneous" multiple baseline (cf. Baer, Wolf, & Risley, 1968) and a "natural" multiple baseline (Hayes, 1985), respectively. Hayes argued that a natural multiple baseline introduces additional threats to validity only insofar as one can infer that the effects of each within-series phase change were due to external (nontherapy) events. Whereas a simultaneous multiple baseline can often control for such coincidence by allowing for observation of stability in uninterrupted series while changes appear in interrupted series, the natural multiple baseline can also protect against such threats to the extent that external events are unlikely to coincide with the timing of the within-series changes. Particularly when used with random timing of phase changes and the inclusion of a large number of series, the natural multiple baseline is felt to represent a feasible design for practice settings that affords greater internal validity than simple replication of A-B designs (Hayes, 1985).
to children and their parents, and diagnoses are made separately for both the child and parent interviews before the final composite diagnostic profile is derived. Good to excellent interrater reliability has been demonstrated for the ADIS-IV-C/P (Silverman, Saavedra, & Pina, 2001). Clinical severity ratings (CSR) are assigned to diagnosis on the basis of the information provided during the interview process. CSRs range from 0 to 8, indicating the clinician-perceived severity of each diagnosis, with 4 or higher indicating a clinical diagnosis.

Interviewers underwent a thorough training procedure in the administration of the ADIS-IV-C/P before administering the measure on their own accord. Each trainee observed at least three interviews, followed by conducting a series of five interviews under the supervision of a senior interviewer. The trainee had to match with the senior interviewer on all diagnoses and severity ratings (within one point) for at least three cases in the series of five. All interviewers were senior doctoral students.

**Child and Adolescent Functional Assessment Scale (CAFAS).** The CAFAS is a clinician-scored, multidimensional rating scale designed to assess functional impairment as experienced by children and adolescents, ages 5 to 17, across eight domains of functioning (Hodges & Wong, 1996, 1997). Raters are provided with a list of behavioral descriptors on each of the subscales, from which they must choose those items that are most congruent with the youth's most severe level of dysfunction during the month preceding the assessment (Hodges & Wong, 1996). Items within each subscale are grouped according to four degrees of impairment: severe, moderate, mild, and minimal or no impairment, yielding scores of 30, 20, 10, or 0 points, respectively. Data generated from two large-scale evaluation studies have indicated that the CAFAS possesses good internal consistency (ranging from .63 to .78) and high interrater reliability (above .92 for the Total CAFAS score, and above .83 for the individual scales; Hodges & Wong, 1996). Content, concurrent, and predictive validity have also been examined with the CAFAS, suggesting that the CAFAS correlates significantly and positively with other indicators of impairment, including severity of psychiatric diagnosis and subsequent service utilization (Hodges & Wong, 1996).

**Child Behavior Checklist (CBCL).** The CBCL (Achenbach, 1991) is a parent questionnaire that measures both child competencies and needs, with 118 items related to a variety of childhood problems. Each item is rated on a 0-to-2 scale, with higher scores reflecting greater endorsement of each item. The problem items on the CBCL can be summed to yield seven specific scales and two broad scales. One of those two scales, the Internalizing Scale, was used in this study as a general measure of anxiety, depressed mood, somatic complaints, avoidance, and withdrawal. Validity and reliability are excellent (Achenbach, 1991), and extensive normative data are available for children ranging in age from 4 to 18.

**Revised Child Anxiety and Depression Scale (RCADS).** The RCADS is a 47-item revision of the Spence Children's Anxiety Scale (SCAS; Spence,
designated to correspond closely to *DSM-IV* anxiety disorders and incorporating a subscale for major depression. On this instrument, children are asked to rate the extent to which each item is true of themselves, by indicating their responses on a 0-to-3 scale, corresponding to anchors of "never," "sometimes," "often," and "always." A large-scale school-based study of the RCADS yielded factor analytic results suggesting the following subscales: Separation Anxiety Disorder, Social Phobia, Generalized Anxiety Disorder, Obsessive-Compulsive Disorder, Panic Disorder, and Major Depressive Disorder. The subscales demonstrated good factorial validity, internal consistency, 1-week test-retest reliability, and good convergent and discriminant validity (Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000). In a second study, the subscale internal consistencies ranged from .71 to .81 (Chorpita et al., 2000). The results of several investigations have provided support for the RCADS as a measure of internal distress. Specifically, convergent validity correlations with the Revised Children’s Manifest Anxiety Scale (Reynolds & Richmond, 1978) total scores range from .63 to .74, and discriminant validity coefficients of anxiety subscales with the Children’s Depression Inventory (CDI; Kovacs, 1980/1981) ranged from .18 to .45 (Chorpita et al., 2000). Additionally, the RCADS Major Depression subscale was highly correlated with the CDI ($r = .70$).

**Participants**

Children referred for treatment at the University of Hawaii Center for Cognitive Behavior Therapy participated in the study. Referrals came from parents or from school personnel through the Hawaii Department of Education. After the initial assessment, consecutively referred children with a principal or co-principal *DSM-IV* diagnosis of an anxiety disorder who accepted treatment were included in the investigation. In sum, 11 children were offered treatment as part of the investigation. Three dropped out of treatment within the first 2 weeks, and one missed or did not show up for eight of the first nine appointments and was also dropped.² Children were excluded from the present investigation and referred to appropriate services if they were not between the ages of 7 and 17, had a primary diagnosis of an externalizing disorder, exhibited symptoms indicative of psychosis, cognitive impairments, chronic medical condition that would interfere in treatment, organic brain disorder, or developmental disabilities. All participants’ diagnostic and supplemental assessment information (e.g., clinical severity ratings, RCADS, CBCL, and CAFAS scores) appear in Table 1.

**Child 1.** The first child was a Caucasian female who resided with her parents and older sister. Both parents had graduate degrees, and the annual family income was reported as $140,000. Child 1 was assessed at the age of 11 years, 6 months, with the ADIS-IV-C/P, and was diagnosed with GAD. Prior

²These dropout rates are comparable to those in major CBT trials for childhood anxiety, which range from 20% to 32% (e.g., Silverman et al., 1999).
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**Note.** CSR = Clinician Severity Rating; GAD = Generalized Anxiety Disorder; SAD = Separation Anxiety Disorder; Social = Social Phobia; Specific = Specific Phobia; TTM = Trichotillomania; PDA = Panic Disorder with Agoraphobia; MDD = Major Depressive Disorder; AD NOS = Anxiety Disorder—Not Otherwise Specified; CBCL = Child Behavior Checklist, Internalizing Scale T SCORE; CAFAS = Child and Adolescent Functional Assessment Scale; RCADS = Revised Child Anxiety and Depression Scale T Score, corresponding to diagnosis at left column; — = missing data; n/a = no scale available; Bold signifies clinical range (T > 65).
Child 1. To her initial evaluation, Child 1 had been prescribed Valium to assist in the reduction of her anxieties regarding school attendance; however, this medication did not yield therapeutic effects, and was thus discontinued. At the time of the assessment, Child 1 had been exhibiting school-refusal behavior for approximately 9 months, and had transferred schools during the middle of her sixth grade year due to excessive worries influencing her school attendance. Although Child 1 was attending school at the time of her initial evaluation, she continued to report several worries affecting school attendance, including the attainment of poor grades, having inadequate time to complete her assignments, displeasing her teachers and peers, and being unable to reach her parents while at school. Such worries were accompanied by excessive crying, as well as such physiological symptoms as loss of appetite, stomachaches, and headaches. Parent report on the CBCL indicated that Child 1 scored in the clinical range on the Total Internalizing Scale of the CBCL (Mother $T = 77$). Child 1 received a score of 30 on the CAFAS, due to mild impairment on the Role Performance–School subscale, and moderate impairment on the Moods/Emotions subscale.

Child 2. The second child was a multiethnic (Asian and Pacific Island) female residing with her mother and four siblings. Child 2's mother had not finished high school, and the annual family income was reported as $13,000. Child 2 was assessed at the age of 12 years, 5 months, and was assigned a primary diagnosis of separation anxiety disorder, with additional diagnoses of social phobia and a specific phobia of contracting an illness or disease. Child 2 was not prescribed any medications at the time of the assessment or during treatment. Approximately 5 months prior to her assessment, Child 2 had stopped attending school as a result of teasing by classmates, concerns about separation from her mother and home, and feelings of distress and discomfort when in social or evaluative situations. In addition to recurrent and excessive feelings of distress when separated from her home or her mother, Child 2 also demonstrated persistent reluctance or refusal to go to school, accompanied by repeated complaints of physical symptoms, including headaches, stomachaches, nausea, and vomiting. Child 2 and her mother also indicated that Child 2 consistently became nervous in several school and social situations, such as when speaking or reading in class, working with a group of other children, or eating in front of others. Such separation and social fears were accompanied by an additional persistent fear of contracting an illness or disease. On self-report instruments used to supplement the ADIS-IV-C/P, Child 2 scored in the clinical range on the RCADS Separation Anxiety Disorder Scale ($T = 78$), and near the clinical range on the Depression Scale ($T = 63$). On the CAFAS, Child 2 received a score of 70, indicating severe impairment on the Role Performance–School and Moods/Emotions subscales, and mild impairment on the Behavior Toward Others subscale. Child 2's mother failed to complete the CBCL as a result of chronic and recurrent life stressors that impeded her ability to participate in the assessment and treatment process.
Child 3. The third child was a multiethnic (Asian and Pacific Island) female who resided with her parents and four siblings. She was assessed at the age of 7 years, 3 months, with the ADIS-IV-C/P, and was diagnosed with trichotillomania and specific phobia of the dark. Child 3’s mother had a 2-year college degree, and her father had a graduate degree. Annual family income was reported to be $42,000. At the time of the assessment, Child 3 and her mother reported that Child 3 was fearful of the dark to the extent that she would wake up her parents approximately three times per week. Child 3 additionally reported that she found it difficult to spend the night at friends’ houses, enter dark rooms, or be in dark rooms of the house by herself. On the CBCL, completed by the child’s mother, Child 3 received an elevation on the Total Internalizing Scale of the CBCL (Mother T = 67). Child 3’s score on the CAFAS was 20, indicating mild impairment on the Moods and Emotions subscale and mild impairment on the Role Performance–School subscale.

Child 4. The fourth child was a female of Hawaiian ethnicity residing with her mother and maternal grandmother. At the age of 8 years, 9 months, Child 4 was assessed with the ADIS-IV-C/P, and received a primary diagnosis of separation anxiety disorder with additional diagnoses of social phobia and specific phobia of vomiting. Child 4’s mother had not finished high school, and the annual family income was reported to be $30,000. At the time of the assessment, Child 4 and her mother reported that Child 4 was experiencing recurrent and excessive distress when separated from her home or separation from her mother occurred or was anticipated, persistent worries about harm befalling her mother, and consistent reluctance or refusal to go to places such as a friend’s house or into new situations because of her fears of separation. Such concerns were accompanied by repeated complaints of physical symptoms, particularly nausea, when separated from her mother. Child 4 was concurrently experiencing discomfort in and fear of certain social situations, primarily those involving her performance in school, and her interaction with peers. Child 4 and her mother additionally reported that Child 4 was experiencing a marked and persistent fear of vomiting at the time of the intake. On the CBCL, Child 4 had an elevation on the Total Internalizing Scale of the CBCL (Mother T = 68). Child 4 received a score of 20 on the CAFAS, indicating moderate impairment on the Moods/Emotions subscale.

Child 5. The fifth child was a male of Japanese ethnicity living at home with his mother, father, and maternal grandmother. His mother had completed college, and his father had received a GED. Annual family income was reported to be $70,000. At the time of the assessment, Child 5 was 10 years, 10 months, and received a principal diagnosis of panic disorder with agoraphobia and additional diagnoses of major depressive disorder, recurrent, severe; GAD; and specific phobia of the dark. Prior to the initial evaluation, Child 5 had been prescribed Paxil (20 mg per day) and Xanax as needed. Child 5 and his mother reported an extensive treatment history, including two separate in-patient hospitalizations for anxiety and depressive concerns. Although Child 5 was attending school at the time of the assessment, his
attendance was sporadic and it was reported that it was a daily struggle between Child 5 and his parents for him to attend. It was reported that Child 5 was experiencing a large number of panic attacks that were leading to an increasing avoidance of situations, including school, crowded places, and roads with few exits. Child 5 and his mother also reported that he had been experiencing depression for the past 2 months, as well as the presence of persistent and excessive worries in numerous domains accompanied by severe physiological symptoms of arousal. Self-report on the RCADS indicated clinical elevations on the Separation Anxiety Disorder ($T = 85$), Panic Disorder ($T = 87$), Generalized Anxiety Disorder ($T = 80$), and Depression ($T = 71$) scales. Furthermore, Child 5’s mother reported a clinical elevation Total CBCL Internalizing Scale (Mother $T = 81$). On the CAFAS, Child 5 received a score of 70, indicating mild impairment on the Role Performance–School subscale, mild impairment on the Role Performance–Home subscale, mild impairment on the Moods/Emotions subscale, and mild impairment on the Thinking subscale.

**Child 6.** The sixth child was a male of Japanese ethnicity who resided with both his parents and younger sister. His mother had a 2-year college degree and his father had completed his GED. No annual family income was reported. Child 6 was assessed at the age of 12 years, 10 months, with the ADIS-IV-C/P and was assigned a primary diagnosis of anxiety disorder not otherwise specified. Although Child 6 exhibited pervasive and uncontrollable worry, as seen in GAD, and exhibited a number of fears concerning evaluation, performance, and social evaluation, he had not been worried or fearful for a period of 6 months. Thus, he failed to meet criteria for GAD or social phobia. Child 6 received an additional diagnosis of major depressive disorder, single episode, moderate. Child 6 had been experiencing extreme difficulty attending school 1 month prior to the assessment. His difficulty attending school commenced subsequent to returning home after a trip to the mainland. After the trip, Child 6 had become increasingly worried about school, performance, world events, and other domains. Child 6 reported worries about being good enough, family matters, his health (particularly his mental health), the health of his parents, his school attendance, grades, and pleasing others. Child 6 was attending school at the time of the assessment but was spending the duration of the day in the counselor’s office crying and discussing his worries. On the self-report measures used to supplement the ADIS-IV-C/P, Child 6 scored in the clinical range on the RCADS Separation Anxiety Disorder ($T = 83$), Social Phobia ($T = 67$), and Generalized Anxiety Disorder ($T = 83$), and Depression ($T = 92$) scales. He also reported a near clinical elevation on the Panic Disorder Scale ($T = 63$) of the RCADS. On the CBCL, the mother of Child 6 reported a clinical elevation on the Total Internalizing Scale of the CBCL (Mother $T = 70$). Child 6’s CAFAS score at the time of the initial assessment was 80, indicating mild impairment on the Role Performance–Home subscale and Self-Harmful Behaviors subscale, and severe impairment on the Role Performance–School and Moods and Emotions subscales.
Child 7. Child 7 was an 11 year, 8-month-old female. Child 7's parents were divorced and Child 7 resided with her mother but saw her father on a daily basis. Child 7 was of multiethnic decent (Asian and Pacific Island). Child 7's mother held a graduate degree and her father had a bachelor's degree. Annual household income was reported as $30,000. Child 7 received a diagnosis of specific phobia, situational type, on the ADIS-IV-C/P. On the self-report measures used to supplement the ADIS-IV-C/P, Child 7 scored within the normal range for both self and parent report. At the time of the assessment, Child 7's mother expressed concern over her daughter's fears of planes and elevators and the significant limits that these fears were imposing on Child 7's life. Child 7 was unable to participate in family vacations that necessitated trips to the mainland. Although she was able to fly to other islands, Child 7 experienced intense fear coupled with several days of worry before her departure. Child 7 and her mother had sought treatment after Child 7 was invited to accompany a friend on a trip but was unable due to the fears of air travel. Furthermore, Child 7 was also unable to ride in most elevators. In most situations, Child 7 chose to walk up stairs even to high floors. Child 7 lived in a high-rise apartment building but was unable to travel to the higher floors of her building. On the occasion when Child 7 had appointments on a high floor of a building, she and her mother had to depart significantly earlier than the appointment time in order to allow Child 7’s mother enough time to coax her into the elevator. Child 7’s mother did not report any clinical elevations on the CBCL Total Internalizing Scale. At the time of the assessment, Child 7’s CAFAS score was 10, indicating mild impairment on the Moods/Emotions subscale.

Treatment Manual

The Modular CBT manual (Chorpita, 1998) draws from the work of Barlow (1988) and Beck and colleagues (Beck, Rush, Shaw, & Emery, 1979) in adults, manualized CBT for children (e.g., Kendall et al., 1990; Silverman et al., 1999), behavior therapy for phobic youth developed in the early part of the 20th century (Jones, 1924), and its extensions and elaborations over the past 30 years (e.g., Ollendick & Francis, 1988). The protocol aims to correct the child’s misperception of threat so that the anxiety response is reduced. Such changes are fostered through education and exposure practice exercises designed to teach the child through reasoning and experience that their anxiety is not necessary or is out of proportion to the perceived danger. All sessions take an active approach, require a session agenda, and employ rapport building and Socratic strategies. Although CBT traditionally focuses on working with the child’s thoughts and behaviors, the manual also emphasizes the need to address factors in the child’s broader environment (Bronfenbrenner, 1986). Parents, teachers, peers, and other influences that maintain, intensify, or otherwise affect anxiety are included as the focus of treatment. Accordingly, behavior therapy strategies for disruptive behavior and poor motivation are also outlined in the manual (cf. Forehand & McMahon, 1981; Patterson,
Chamberlain, & Reid, 1982), and many of the parent strategies and accompanying handouts are designed to be used with teachers as well.

An important feature of the Modular CBT manual is that it is designed explicitly to encourage the individualizing of each child’s treatment. For example, some children might require a few sessions at school, others might require several months of therapy in a clinic setting. Some children might need to have parents incorporated into the program, others less so. According to the manual, the specific steps and procedures of the treatment are dictated by the needs of the child. The arrangement of techniques is outlined in Figure 1. Despite the flexible nature of such a program, all children receive a minimum set of four procedures (i.e., the “core four”) believed to represent the main components of treatment, which are: (a) self-monitoring (“Fear Ladder”), (b) education about anxiety (“Learning About Anxiety”), (c) practice of feared situations (“Exposure”), and (d) education about maintaining new skills (“Maintenance and Relapse Prevention”).

The Fear Ladder is the term used to describe a fear hierarchy, created jointly by the child and therapist to reflect gradations of 10 to 12 feared situations or stimuli (Barlow & Seidner, 1983; Wolpe, 1958). The hierarchy is completed twice weekly with ratings ranging from 0 to 8, and the average rating across all situations for each administration was used as the primary time-series measure for the design. Although part of the manual, the Fear Ladder

![Image of clinical algorithm for Modular Cognitive Behavior Therapy.](image-url)
module is designed to allow for continued assessment and so is not formally considered active treatment (hence, delivered in the baseline phase of the design). The Learning About Anxiety module is designed to introduce a language to the child with which to talk about thoughts and feelings and to begin working with the child on the concept that anxiety can represent a "false alarm" (cf. Barlow, 1988). As such, this module lays a cognitive framework for any exposure that is to follow. The Exposure module then involves the selection of items from the fear hierarchy to be used in practice exercises, during which periodic fear ratings are taken to track habituation patterns. These exercises are also assigned for homework. Finally, the Maintenance and Relapse Prevention module is designed to allow for a review of skills learned and to foster the child's attribution of gains to the behaviors learned and performed in treatment.

Children and families who require more techniques than those represented in the core four modules are taken through those steps as the need arises. The selection of appropriate additional modules and the determination of when to initiate and terminate each are determined as a part of the clinical supervision process, which is guided by the use of the flowchart. Thus, if there is mutual agreement that exposure is not possible, the therapist and supervisor will infer what sources of interference might exist and thereby select and deploy a module representing an appropriate strategy. Interrater reliability data regarding the use of the flowchart in a variety of clinical contexts are being gathered as part of a separate investigation. The empirical rationale for this arrangement of techniques is based on more than 50 studies showing the efficacy of exposure for anxiety in various forms (Chorpita et al., 2002; Ollendick & King, 1998). Although the literature is not explicit about the necessity of cognitive elements in interventions for anxiety, their preponderance in the literature on nonphobic anxiety disorders suggested that some aspects of addressing cognition are likely to be important. For this reason, the protocol introduces the idea of exposure in the context of testing assumptions about perceived threat. All other techniques are seen as enabling these techniques that are so commonly represented in the anxiety treatment literature.

The manual includes forms that help to structure and standardize the delivery of techniques. These forms were created specifically for use with this manual. Worksheets (e.g., puzzles, games) are used in-session or as homework exercises and incorporate and integrate material learned in therapy. A variety of monitoring forms are used to track progress or events that are important to therapy. Finally, educational sheets and booklets are given to parents and teachers to reinforce information about a technique that has been reviewed in session. These handouts are designed to be a reference for parents and teachers participating in the child's therapy.

Procedure

Therapists in the current investigation were three doctoral-level graduate students. Each therapist followed the Modular CBT manual and received
weekly supervision from the first author. The effects of treatment were evaluated using a multiple baseline design across children. Following the pretreatment assessment, children were randomly assigned to a minimum 1.5- or 3-week baseline. Prior to beginning baseline, each child worked with a therapist to construct a fear hierarchy, to be completed twice weekly as a self-monitoring tool for the duration of the study. Treatment began after observation of a stable trend in the fear hierarchy data, following the minimum 1.5- or 3-week waiting period (Hayes, Barlow, & Nelson-Gray, 1999). Thus, baseline was staggered and treatment began for all cases with “Learning About Anxiety” (see Figure 1). Subsequent content of sessions was dependent on participant progress and guided by the treatment algorithm outlined in Figure 1. Treatment was terminated when children demonstrated a stable trend of improvement or reported consistently low fear hierarchy ratings, and when they had completed the final modules. Children were then assessed by an independent evaluator both at posttreatment and again after a 6-month interval.

Results

Multiple Baseline

Overall trends. The multiple baseline across children appears in Figure 2. All seven children demonstrated relatively stable trends during baseline, with most maintaining high or increasing levels of anxiety and two showing minimal downward trends. Child 1 was assigned to a 1.5-week baseline, but began treatment following a 4-week waiting period because extraneous events (i.e., medical exams) occurred during the planned timing of the phase change and would have confounded interpretation of effects (see below). Children 2 and 7 were assigned to a 1.5-week baseline, but Child 2 was held to 2 weeks because the first three data points suggested possible improvements due to reactivity or other extraneous variables, and Child 7 was held to a 2-week baseline because of missing data during the first 10 days, which would not have provided sufficient data for the interpretability of baseline. Children 3 and 5 began treatment subsequent to a 3-week baseline, and Children 4 and 6 began treatment subsequent to a 1.5-week baseline.

Throughout the duration of treatment, all participants were asked to complete their respective fear hierarchies twice per week. Figure 2 presents the children’s fear ratings on their respective fear ladders over the course of treatment (averaged across situations and stimuli on the ladder). After the completion of the initial baseline and the commencement of active treatment, the fear ratings for each of the participants were observed to decrease over treatment, as noted by the trend lines.

3 Visual inspection criteria for determining stability are those outlined by Hayes, Barlow, and Nelson-Gray (1999), and identification of improvement involved a conjunction of stability with a noticeable change in trend from baseline to the intervention phase.
FIG. 2. Multiple baseline of mean fear hierarchy ratings across seven participants.
Individual results. Child 1 was unable to attend therapy sessions after 1.5 weeks, due to the child’s daily vomiting reported by her family. Until day 25, Child 1 underwent medical examinations to ascertain whether medical/organic causes might underlie her frequent vomiting. For these reasons, the baseline for Child 1 was necessarily extended to 28 days (extra days were added to allow for stable baseline after completing medical evaluations, which all failed to indicate an organic cause for the child’s vomiting). Overarching goals of Child 1’s treatment included decrease in frequency, severity and breadth of worry and increasing consistent school attendance. Child 1 received the Learning About Anxiety module in the first and second sessions. Exposure was started in Session 2, and was practiced for the next four treatment sessions. Exposure exercises involved gradually practicing going to school and engaging in role-plays involving handing in messy homework, given her anxiety regarding evaluation in school. There were notable decreases in her anxiety over the next few weeks. During this time, vomiting decreased in frequency while somatic complaints to her parents increased. By the fifth treatment session, school resumed from the summer recess, and a higher level of tantrums (e.g., cursing at family and hitting family members) in conjunction with somatic complaints was observed. Thus, in the sixth treatment session, both the Rewards and Active Ignoring (differential reinforcement of other behavior) modules were covered with the parents. Sessions 6 through 10 included ongoing application of differential reinforcement strategies, rules and rewards with parents, and exposure with the child. Also, because of some hesitance to continue with exposure exercises, the STOP module (cognitive techniques to assist in the decrease of negative thinking for younger children) was introduced in Session 8.

Child 1 became ill at 10 weeks into treatment, complicating the continued administration of differential reinforcement, and rendering Child 1 unable to monitor successfully at this time. Child 1 resumed sessions and monitoring 13 weeks into treatment, and demonstrated a decrease in somatic complaints. Her anxiety remained at low levels, and her attendance in treatment was consistent for the remainder of treatment. Sessions 10 through 13 included review of previous modules and gains. The last three treatment sessions involved the Maintenance and Relapse Prevention module. These sessions were faded to every other week, and terminated at day 155, at which time Child 1 had completed 15 active treatment sessions.

The mother of Child 2 refused to participate in therapy from the first session, despite repeated requests issued by the school and the treating therapist. Child 2’s mother consented for her child’s participation but was unwilling to speak on the phone to the therapist or teachers. Each of the four initial treatment sessions scheduled were missed or canceled by Child 2’s mother for reasons we were unable to determine. Since all attempts at a first session after the initial assessment were missed or cancelled, the therapist began traveling to the school to ensure consistent monitoring of school attendance and anxiety and to administer treatment protocols as indicated. As a result, almost all
sessions with Child 2 were conducted in school. The goals of treatment for Child 2 were to increase her ability to be away from her mother and her home, to attend school consistently, to decrease her fear in social situations, and to assist her with fears of contracting an illness or a disease. Child 2 received the Learning About Anxiety module in the first session. In the second session, exposure was implemented simultaneously with the Rewards module, in anticipation of predicted difficulties with motivation to participate in treatment and low levels of support from Child 2's family. Because of the parent's refusal to participate in treatment, the delivery of rewards was implemented in a coordinated effort between Child 2’s therapist and teachers. Exposure involved time in school and speaking to others during the next several weeks. The third through sixth sessions focused on continued exposure exercises with the child in the school setting. Habituation was observed within and between sessions. Within 3 weeks of the commencement of active treatment and exposure exercises, the child was attending school on a consistent basis. In the seventh session, the rewards system was changed to reinforce attending school after the weekend. The frequency of therapy sessions was decreased to every other week, and the Maintenance and Relapse Prevention module and generalization strategies were discussed in the eighth session. In total, Child 2 received eight sessions over 14 weeks.

Child 3 began treatment after a 3-week baseline. The goal of treatment for Child 3 was to decrease fearfulness in the dark. The Learning About Anxiety module was administered in the first session. Exposure began in Session 2. Practice exercises involved having the child sit in a dark room, first with the therapist and then alone. Habituation was noted almost immediately, and exercises incorporated longer and longer durations. Being in the bedroom with the light off was assigned for homework, and Child 3's parents were instructed to praise and encourage the practice exercises. Within 2 weeks, Child 3 was no longer waking her parents during the night, and she was able to be in a dark room alone without becoming fearful or experiencing a fearful response. Relapse prevention and the importance of continued practice were discussed in the remaining sessions, as indicated by the protocol. Overall, five sessions of active treatment were delivered over a 7-week period to Child 3.

Child 4 began treatment after a 1.5-week baseline. The goals of treatment for Child 4 included (a) increasing ability to separate from her mother, (b) decreasing fear in social evaluative situations, (c) decreasing frequency of somatic complaints and chronic reassurance seeking, and (d) decreasing fear of vomiting. The Learning About Anxiety module was administered in the initial treatment session. In the second session, exposure was implemented, and Child 4 was asked to engage in activities that included not sleeping in her

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4 Within- and between-trial habituation are tracked on the weekly practice form, which allows the therapist to connect graph points indicating successive ratings within a trial and across trials. Each series yields a line that corresponds to within- and between-trial habituation, respectively.
mother’s room, her mother going out without her, assertiveness, and talking to new people. These types of exposure activities were continued throughout the duration of treatment. In the fourth treatment session, the Active Ignoring module was implemented with the mother of Child 4 to decrease Child 4’s reassurance seeking and somatic complaints. In the fifth treatment session, the Exposure and Active Ignoring modules were continued. In Session 6, the STOP module was implemented. Exposure and the use of STOP were practiced in session as well as for homework in Sessions 6 through 9. In Session 10, problem solving with Child 4’s mother about her own anxiety was initiated. In Sessions 11 and 12, exposure and monitoring of the maintenance of gains continued. In the final sessions, the Maintenance and Relapse Prevention module was reviewed with Child 4 and her mother. Overall, within 2 weeks of the start of active treatment, Child 4 was sleeping in her own bedroom on a nightly basis; within 5 weeks her mother was able to go out without Child 4 on a regular basis; and within 11 weeks the child was able to attend sleepovers without fear on a weekly basis. Moreover, with the implementation of the Active Ignoring module, Child 4’s excessive reassurance seeking and somatic complaints had decreased drastically and were no longer identified as problematic by her mother. Overall, 15 sessions of active treatment were delivered to Child 4 over 25 weeks.

The goals of treatment for Child 5 were to decrease his experience of panic attacks, assist him in developing skills to increase consistent school attendance, increase his ability to be in settings outside his home, and to develop skills to manage his experience of symptoms of anxiety including physiological and cognitive manifestations. Child 5 began treatment following a 3-week baseline with the Learning About Anxiety module, which spanned two sessions. After the completion of this module, the Exposure module was implemented in Session 3 and concentrated on interoceptive exposure exercises. The exposure exercises mainly involved experiencing bodily sensations, such as feeling short of breath, nauseated, and dizzy. Further exposure exercises concentrated on being in new places, being lost, driving on a one-way street, and combining these situations with the experience of sensations of heightened physiological arousal. Habituation patterns were observed both within and between sessions on the exposure records; however, fear hierarchy ratings decreased only slightly over the course of treatment. In the fourth active treatment session, the STOP module was reviewed with Child 5. After this session, the child was encouraged and coached in using these techniques while participating in exposure exercises. Due to somatic complaints pertaining to his school-refusal behavior, Child 5’s mother was instructed in the use of Active Ignoring in Session 8. By 10 weeks into treatment, Child 5 was able to engage independently in interoceptive exposure while systematically increasing the difficulty of the exercises without excessive fear or demonstrating patterns of avoidance. Moreover, he was able to articulate the phenomenon of anxiety and recognize the importance of engaging in feared behaviors and situations. At 17 weeks into treatment, Child 5 was able to
engage in exercises that involved his presence in uncomfortable situations without the presence of others. After 24 weeks of treatment, Child 5 was able to accompany his parents on a vacation that included flying on an airplane and participating in family excursions. Because Child 5 experienced fear of new places and settings (e.g., driving in a car, parks, malls), exposure was conducted in both the clinic and community settings in order to address the concerns of Child 5 and in order to increase adaptive functioning. In total, Child 5 received 17 sessions of active treatment delivered over 30 weeks in both the clinic and community.

Child 6 began treatment following a 1.5-week baseline with the Learning About Anxiety module. In the second session exposure was initiated with the client on exercises that included triggers of his pervasive worries and heightened social fears, such as attending classes, speaking to teachers and adults, talking to other children, issues of assertiveness, performance-related concerns, and other issues that provoked worry. Beginning in the third session, Child 6 learned cognitive techniques, followed by Probability Overestimation (Sessions 3 and 4) and Catastrophic Thinking (Sessions 6 and 7) modules. By 6 weeks into active treatment, the client was attending school on a regular basis. Despite patterns of habituation, Child 6 continued to experience low mood. and cognitive techniques were further applied to his experience of low mood (Session 8). Child 6 maintained a consistent level of attendance through the first semester of school, and had no difficulty returning to school after the semester break. In the final sessions, the Maintenance and Relapse Prevention module was covered with Child 6 and his parents. In sum, 10 active treatment sessions were delivered over 20 weeks to Child 6.

Child 7 began treatment with the Learning About Anxiety module after a 2-week baseline. The goal of treatment for Child 7 was to assist her in decreasing her fear of riding elevators and flying on airplanes. Exposure began in the second treatment session and focused on the child habituating to riding an elevator, with subsequent sessions focusing on riding elevators and flying on airplanes. Exposure to riding elevators, being in airports, and flying on planes was continued in Sessions 2 through 8, culminating in some inter-island flights around the Hawaiian islands. Child 7 showed habituation to both elevators and flying through the course of treatment. In the final sessions, the Maintenance and Relapse Prevention module was reviewed with Child 7 and her mother. Child 7 received 9 sessions of active treatment over the course of 9 weeks in multiple settings.

Posttreatment Assessments and 6-Month Follow-Up Assessments

Diagnosis and clinical severity rating. All children and their parents were interviewed using the ADIS-IV-C/P at pretreatment, posttreatment, and 6-month follow-up. Table 1 presents diagnoses and clinical severity ratings for each child at pre-, post-, and 6-month assessment. Each child received a diagnosis of at least one anxiety disorder at the time of the pretreatment assessment. Results of the assessments indicate that, with one exception, all children
were diagnosis-free at (the) posttreatment and 6-month assessments. Child 5 received three comorbid diagnoses at the time of the pretreatment assessment, but was diagnosis free at the time of the posttreatment assessment. However, Child 5 and his mother reported that he had begun to evidence symptoms of GAD (one of his initial comorbid diagnoses) soon after he returned to school in the fall, in conjunction with the events of September 11, 2001.

Assessment scales. CBCL, CAFAS, and RCADS data are summarized in Table 1. All children but one (Child 7) evidenced clinical elevations ($T > 65$) on the Internalizing Scale of the CBCL at pretreatment, as reported by their mothers. For the most part, CBCL Internalizing scores decreased over the course of treatment, with only one child (Child 1) showing a clinical elevation at posttreatment and one (Child 5) at 6-month follow-up. Child 5 evidenced a decrease at posttreatment, followed by a clinical elevation at the 6-month follow-up assessment. Child 2’s mother completed the CBCL only at the 6-month follow-up; thus, it is unclear whether that child’s score decreased during the course of treatment. However, the 6-month follow-up score indicated that Child 2 fell within the normal range at that time.

Similar patterns were found with CAFAS scores. Results revealed that CAFAS scores decreased over the course of treatment with all children improving in their level of functional impairment from pretreatment to the posttreatment assessment. The average drop in CAFAS score from pretreatment to posttreatment was 35.7 points, and the average drop from pretreatment to 6-month follow-up was 37.1 points.

Finally, RCADS scores corresponding to children’s diagnoses are also summarized in Table 1. For the most part, these were clinically elevated at pretreatment (two children scored only in the subclinical range on diagnosis-related scores). No diagnosis-related scores were clinically elevated for any child at posttreatment, and clinical elevations reemerged only for Child 5 at the 6-month follow-up. This finding is consistent with some of the other assessment data regarding Child 5, suggesting a return in symptoms, despite maintaining increased functioning as measured by the CAFAS.

Discussion

The present study is informative in that it demonstrated a successful extension of the developing literature on prescriptive approaches to intervention with anxious youth (e.g., Eisen & Silverman, 1998; Kearney & Silverman, 1990). The individualized nature of the protocol is rather apparent from the process measures of the CBT delivery. Although all children participated in the core psychoeducation, exposure, and maintenance exercises, only two (29%) participated in differential reinforcement strategies, two (29%) were administered rewards, and three (43%) participated in formal cognitive exercises. Of these last three, two received the cognitive training designed for younger children, and the other received two modules designed for older
children. Two children (29%) received only the core components of the manual (psychoeducation, exposure, and maintenance). The sessions delivered ranged from 5 to 17 in total, and occurred in durations ranging from 7 to 30 weeks. Thus, from a process perspective, the manual allowed for a high degree of individualization of the intervention.

The manual was able to accommodate a similar degree of diversity among the participants as well. The socioeconomic status of the families was wide ranging, with reported incomes ranging from $13,000 to $140,000 annually. Two of the cases involved medication nonresponse. One was conducted almost entirely at school. Three of the cases involved single-parent families, and six of the seven cases involved non-White participants. This last observation is particularly notable, as successful demonstrations of CBT with Hawaiian, Asian, and Pacific Island youth have yet to appear in the literature.

Among the seven completers, the results showed fairly consistent gains across parent report measures, diagnosis, and measures of child functioning. All of the children were diagnosis free at posttreatment, and only one child (14%) showed the return of any diagnosis at the 6-month follow-up. The initial principal diagnosis for this child, however, remained in full remission. The reemergence of initially comorbid diagnosis at long-term follow-up has been noted as a trend elsewhere in the literature, and is therefore not a complete surprise. This suggests that particular attention to the initially comorbid diagnoses might be important as treatment begins to reach its conclusion.

A number of weaknesses in the design need to be mentioned. First, a complex and flexible manual would best be accompanied by integrity checks, to ensure that the techniques were delivered properly and to validate the therapist choices in line with the guiding clinical algorithm. Although records of session content were completed and did reflect proper adherence, the therapist completed these as part of clinical supervision, and no independent ratings were taken. Another potential threat to validity involved the independent evaluations. The detailed nature of the interview and the routine assessment of all anxious children at posttreatment made it impossible to prevent the evaluators' awareness that children had participated in treatment. This information could have allowed evaluators to infer the goals of the study; however, the results of the self-report and parent-report measures appeared to be consistent with those of the evaluator report, suggesting that these problems were likely minimal. Finally, the inclusion of an active comparison condition (e.g., attention or support) would have been able to strengthen the study such that the effects might be more easily attributed to specific aspects of the intervention.

A more specific issue involved the ambiguity of the time-series data for Child 5. Oddly, Child 5 was able to habituate within each session and to complete an increasingly difficult series of exposure exercises over time, yet the fear hierarchy ratings remained largely the same almost to day 200. Both the supervisor and therapist observed that substantial progress was occurring in terms of increased functioning and decreased avoidance, despite the stationary fear ratings. This was discussed with the child near day 200, with a
suggestion being made that perhaps the child did not understand how to complete the ladder or did not know what it was meant to reflect. A corresponding drop in fear ratings was observed, but was not fully sustained, and it was difficult to interpret these data. On all other measures, the child showed improvement, although the observation that an initially comorbid diagnosis returned at 6-month follow-up further complicates the inference regarding whether gains were fully attributable to the CBT protocol or to other factors for this child. Given the more tentative inferences involved with Child 5, it might have been advisable to continue treatment for somewhat longer to substantiate the new pattern of fear ratings and to ensure that the child had made substantive gains. Also, given the possible role of the events of September 11, additional intervention might have been warranted for this youth during the follow-up period, which might have included cognitive techniques related to the perceived threat of terrorism.

A more general issue that bears consideration involves the difficulty facing tests of a modular protocol. That is, even in a large randomized trial, some questions about the manual cannot easily be answered. For example, in this investigation, several components of the manual were never used (e.g., Social Skills). Although it appears that the manual allows for considerable flexibility and hence efficiency, assumptions about which modules are needed and which are not for a given child remain difficult to test. At this point the data suggest only that the use of the manual appears promising for a variety of anxiety disorders and across a range of ages.

In summary, there is initial support for the use of Modular CBT for anxiety disorders in youth. Although there is no evidence that the modular approach is more or less suitable than other CBT approaches at this point, the prescriptive strategy fits with broader CBT theory (Beck et al., 1979) and logically indicates potential increases in efficiency. Future research is needed to evaluate this protocol and similar modular approaches in larger investigations, ultimately comparing a simplified modular approach with a fixed approach, to begin to identify empirically the relative merits of each, and to determine which approach might be more suitable in a given context.
### APPENDIX

**Modules Covered Within Sessions for All Participants**

<table>
<thead>
<tr>
<th>Session</th>
<th>Child 1</th>
<th>Child 2</th>
<th>Child 3</th>
<th>Child 4</th>
<th>Child 5</th>
<th>Child 6</th>
<th>Child 7</th>
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References


