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Cognitive Behavioral Therapy for Anxiety Disorders in Youth

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Synopsis

Cognitive behavioral therapies (CBTs) have been shown to be efficacious for the treatment of anxiety disorders in children and adolescents. Randomized clinical trials indicate that approximately two-thirds of children treated with CBT will be free of their primary diagnosis at posttreatment. Although several CBT treatment packages have been investigated in youth with diverse anxiety disorders, common core components have been identified. A comprehensive assessment, development of a good therapeutic relationship and working alliance, cognitive restructuring, repeated exposure with reduction of avoidance behavior, and skills training comprise the core procedures for the treatment of anxiety disorders in youth.

Keywords

anxiety; cognitive therapy; behavioral therapy; children; adolescents

Overview and Clinical Presentation

Epidemiological studies suggest that anxiety disorders are the most frequently diagnosed class of disorders in children and adolescents and that most people who develop an anxiety disorder do so by late adolescence or early adulthood [1, 2]. While some fears and anxiety can be adaptive and developmentally appropriate [3], clinical levels of fear and anxiety can engender significant distress in children and their families and are likely to interfere with academic and social functioning [4–6]. Moreover, the high prevalence of anxiety disorders coupled with the negative effects on functioning results in a significant economic burden on society [7].

According to the DSM-IV-TR, children and adolescents can be diagnosed with 12 different anxiety disorders -- separation anxiety disorder, panic disorder with or without agoraphobia,

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agoraphobia without a history of panic disorder, specific phobias, social phobia, obsessive-compulsive disorder, posttraumatic stress disorder, acute stress disorder, generalized anxiety disorder, anxiety disorder due to a medical condition, substance-induced anxiety disorder, and an anxiety disorder not otherwise specified^[8]. While decisions regarding the status of anxiety disorders in DSM-V have not been finalized, it seems that only a few changes are proposed for the updated diagnostic manual planned for publication in 2013. Specifically, changes under consideration include specific criteria for posttraumatic stress disorder in preschool children, removal of agoraphobia without a history of panic disorder, and movement of separation anxiety disorder from Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence to the Anxiety Disorders section of the DSM^[9].

Comorbidity is the rule rather than the exception in the clinical presentation of anxiety disorders. Epidemiological and clinical studies show that in about 75% of cases youth are diagnosed with multiple anxiety disorders and about 50% to 60% of children and adolescents diagnosed with an anxiety disorder evidence a comorbid affective disorder^[10, 11]. Comorbidity of anxiety disorders with disruptive behavior disorders is also common, with some estimates suggesting that between 25% and 33% of youth diagnosed with an anxiety disorder will evidence a comorbid externalizing disorder^[12]. Therefore the treatment of anxiety disorders in youth must necessarily take into account the presence of comorbid conditions. Interestingly, however, comorbidity does not seem to predict treatment outcome^[13], suggesting that cognitive behavior therapy (CBT) for anxiety disorders can be effective regardless of the presence of comorbid conditions. Presentations of somatic complaints in anxious youth, particularly stomach complaints in younger children and headache in older children and adolescents, is common^[14].

History of CBT for Anxiety Disorders in Childhood

Like CBT for anxiety disorders in adults, CBT for childhood anxiety disorders emerged from two areas of experimental psychology -- learning theory and cognitive psychology. Mary Cover Jones, one of J. B. Watson's students, was among the first to apply behavioral principles to the treatment of childhood anxiety. More specifically, Jones used modeling and exposure to treat childhood fears and phobias. Although these types of treatments were considered controversial at first, by the 1960s and 1970s recognition of their success was growing and behavioral treatments became widely accepted. Also, around this time, significant developments in the clinical application of social learning theory and cognitive theory by Bandura and Beck led to an integration of cognitive and behavioral treatments.

Two pioneering books were among the first to recognize the importance of these approaches. First, Donald Meichenbaum's *Cognitive-Behavior Modification*^[15], discussed CBT for the treatment of anxiety; soon after, Ollendick and Cerny published *Clinical Behavior Therapy with Children*^[16]. Today, there is a growing literature on the use of CBT for the treatment of anxiety disorders in youth and, while questions and controversies remain -- including the comparative and combined efficacy of CBT and other available treatments and the active "ingredients" or mediators of CBT, CBT is used in a variety of settings including schools, outpatient clinics, inpatient or partial-hospitalization programs, and primary care practices. Moreover, research suggests that these treatments can be effective in significantly ameliorating the distress suffered by children with anxiety disorders.

Evidence of Efficacy and Effectiveness

Over 40 studies have been conducted to examine CBT for anxiety disorders and anxiety symptoms in youth and, taken together, these studies provide the empirical support necessary to make CBT the only psychological treatment identified to date as an evidence-

based treatment [17, 18]. (See Table 1 for a list of these studies.) Effect sizes from randomized controlled trials are generally large [19], and posttreatment assessments suggest that approximately two out of three children treated with CBT can expect to be free of their primary diagnosis with a course of treatment that usually lasts between 12 and 16 weeks. Maintenance of treatment gains, and in some cases, further improvement, can be seen in studies that follow treated youth up to nine years post treatment [20].

Moreover, as indicated previously, CBT for anxiety disorders in youth appears to be efficacious even in the presence of comorbid conditions [13, 21] and across different ethnic and cultural groups [22–24]. Although more work is needed to test the effectiveness or generalizability of CBT for youth with anxiety disorders, available evidence suggests the potential transportability of these treatments from the lab to a wide variety of clinical settings with little detriment to the size of treatment effects [25, 26].

Core Procedures in the Cognitive Behavioral Treatment of Anxiety Disorders in Youth

Given CBT's roots in learning and cognitive theory, it follows that the primary goals of CBT for child anxiety are to change maladaptive learning and thought patterns. What may be less obvious are that the implications of these foci make CBT approaches to child anxiety distinct from many other psychosocial interventions for youth. First, CBT approaches to child anxiety attempt to understand the roots of the presenting problem only to the degree that this understanding gives rise to a way to intervene in the "here and now". Treatment is much more focused on addressing the factors that maintain the child's symptoms rather than understanding what gave rise to the disorder. For example, one might want to know how a parent has reacted in the past to a child's attempts at avoidance but rather than focusing on these past interactions, this knowledge would be used to help the clinician know whether to work with parents on developing a new approach with the result of allowing for an altered learning experience for the child.

Additionally, CBT is a skills building approach. This means that clinicians are directive and sessions may appear very didactic. However, sessions are seen only as an *initial* step in the learning process. Meetings with the child and/or parents are used to introduce skills, provide initial practice and problem-solve; however, homework assignments outside of session provide the repeated practice required for complete skill acquisition and refinement. Moreover, given the importance of the context in which the anxious behavior occurs in behavioral theory, it necessarily follows that CBT for child anxiety often introduces new skills for parents, teachers, and sometimes even siblings or peers. In fact, the child's parents often become the major agents of change and work together with the clinician to implement the treatment, especially so with younger children. Parents and teachers are often asked to change their behavior (e.g., model non-anxious self-talk), change their approach to their child's anxiety (e.g., reinforce approach and provide less opportunity for avoidance), and to act as a coach for the child when he or she is completing homework assignments or generalizing skills into everyday situations. This requires a commitment on the part of the child and his or her parents that extends beyond the typical one hour per week session. On the other hand, treatment is typically time-limited. Goals are set by the child and parents in collaboration with the therapist and once adequate skills have been developed and treatment goals are reached the termination process begins. In the case of most childhood anxiety disorders, treatment usually takes twelve to sixteen weeks, rarely extending beyond six months of active treatment. However, "booster sessions", spaced out sessions that may extend over a four to six month time period, may be used as a way to provide review of difficult skills. This may be particularly helpful in that effective treatment may lead a child to encounter new situations because of an increase in the ability to engage in a full-range of

activities. Booster sessions may be used to help a child generalize skills to these situations and ensure durability of treatment gains.

Although several different cognitive behavioral treatment manuals have been developed to more specifically explicate CBT treatment procedures for child anxiety, Woody and Ollendick and Ollendick and Hovey^[27, 28] have identified several principles that cut across these treatments. These are discussed below.

Empirically Sound Assessment of Anxiety Disorders in Children

A thorough assessment is necessary prior to beginning a successful course of CBT to address an anxiety disorder with a child or adolescent and his or her family. The assessment should begin with a complete diagnostic evaluation including determining whether the presenting symptoms are clinically significant and if so, conducting a thorough differential diagnosis to discriminate amongst the anxiety disorders and between anxiety disorders and those disorders with similar presentations, including medical conditions such as hyperthyroidism and asthma. Given the high rate of comorbidity in children seeking treatment for anxiety disorders, it is also necessary to determine if comorbid psychiatric conditions exist, and if so, which symptoms should be the primary targets of early treatment. In addition, specific examples of functional impairment, along with indicators of severity, should be identified in order to aide the child and therapist in establishing treatment goals and monitoring treatment progress. Cognitive appraisals of feared stimuli, attempts at approach, and environmental reactions to the child's avoidance should also be thoroughly assessed in order to develop a thorough case conceptualization.

Although a thorough review of the available measures and approaches to assessment of anxiety in youth is beyond the scope of the current review, recent reviews suggest that numerous standardized measures including diagnostic interviews and questionnaires, are available for collecting information from children, parents, and teachers^[29]. In addition, individually tailored behavioral avoidance/approach tests and monitoring forms can be particularly helpful in assessing functional impairment and monitoring treatment progress. However, much work remains to be done in this area, including understanding discrepancies between parent and child reports of symptoms and the discordance in the assessment of the tripartite features of anxiety (i.e., physiological arousal, subjective anxiety, and behavioral avoidance)^[30–32]. Moreover, additional work is needed to establish the clinical utility of laboratory measures of anxiety^[33](e.g., computerized measures of attentional biases) and in efficiently assessing potential mediators of change and meaningful quality of life indicators. Further, in order for CBT to be considered as a first-line treatment, and for clinicians and patients to make informed choices about treatment options, better measures of the costs (financial and otherwise) associated with CBT for anxious youth are needed to allow for cost-benefit analysis at the individual and societal scale.

Establishing Rapport and working with the Parents of Children with Anxiety Disorders

The importance of the therapeutic relationship has long been recognized by clinicians working with children and adolescents. However, cognitive behavioral theory clearly hypothesizes specific factors in addition to the therapeutic relationship that are thought to be necessary for a full treatment response. Moreover, much of the cognitive behavioral treatment research has focused on treatment *procedures* given the relationship of these procedures to the core hypothesized mechanisms of change implicated in cognitive and behavioral theory. This is in contrast to humanistic therapies in which the therapeutic relationship is hypothesized to be the key mechanism for change. Perhaps because of this

contrast, CBT has sometimes been characterized as sterile or mechanistic and practitioners of CBT have been criticized for their lack of attention to the importance of the therapeutic relationship. We would submit, however, that this is far from the truth [34, 35]. In fact, even a cursory examination of most CBT treatment manuals for anxiety disorders in youth reveals that CBT treatments require development of a therapeutic relationship and working alliance in addition to an active, relatively prolonged effort on the part of the child and his and family. Exposure sessions, discussed below and widely recognized as a core component of effective CBT treatments for anxiety in youth, are inherently distressing and compliance would seem unlikely without a strong relationship with both the parents and the child and agreement on both the tasks and goals of treatment [36]. However, in addition to the empathic listening skills, genuineness, and positive regard often thought to be primary means of establishing the therapeutic relationship, CBT therapists may rely more heavily on the collaborative relationship inherent in CBT and the provision of a theoretical rationale and treatment plan to enable the child to experience the therapist as someone who can be of help. To date, though we know that a positive therapeutic relationship is related to better outcomes in CBT for childhood anxiety disorders [34], we know little about what constitutes a positive relationship or whether the therapist behaviors contributing to the therapeutic relationship vary across different therapeutic approaches. .

Cognitive Restructuring

Given the theoretical link posited by cognitive theory between erroneous or maladaptive cognitions, the subjective experience of anxiety, and anxious behavior, one of the core components of CBT for child anxiety is cognitive restructuring of anxious cognitions. This requires the child to first explicitly recognize their “self-talk” and then to understand the links between self-talk and their symptoms. Monitoring in anxiety provoking situations is often used to help a child identify specific maladaptive cognitions. Restructuring may take the form of direct discussion or guided discovery to question the validity of a thought or belief. This discussion can take several forms but a basic approach is summarized in four steps recommended by Padesky [37], these include (1) asking informational questions to identify the thought and find data to test the veracity of the thought, (2) empathic listening, (3) summarizing, and (4) using synthesizing or analytical questions to help the child come to a new understanding. Of course, a purely cognitive exercise may be difficult to accomplish depending on the age and cognitive development of the child. Behavioral experiments may be particularly effective methods of cognitive restructuring in such cases.

Behavioral experiments can be used to target a specific cognition such as “if I ask a child to play with me, he will laugh at me”. In this case the child and therapist would design an experiment asking a peer to play with the explicit goal of testing the veracity of the child’s belief. The child is asked to engage in the experiment with the explicit goal of “data collection”. Almost all of the CBT treatments for anxiety disorders in youth use some form of cognitive restructuring. Most programs will have a component in which the child first monitors thoughts to identify those giving rise to symptoms, then actively disputes those thoughts first with the therapist and then with increasing independence, and then develops new more adaptive, coping thoughts [23, 38, 39].

Repeated Exposure and Reduction of Avoidance

Exposure to feared stimuli is arguably the central component in most CBTs for child anxiety. In fact, Chorpita and his colleagues found exposure based treatments for anxiety disorders in youth to be associated with the largest effect sizes [19]. Early exposure therapies guided by a reciprocal inhibition hypothesis paired feared stimuli (e.g., dogs, social situations, germs) with a response incompatible with anxiety - often muscle relaxation [40].

In such an approach the child would be trained in relaxation techniques and a hierarchy of feared stimuli would be developed. Systematic exposure to the feared stimuli would proceed with the child engaging in relaxation procedures. Any symptoms of anxiety would be countered with relaxation, as the goal would be to avoid the experience of anxiety in order to condition an association between the once-feared stimuli and relaxation. However, such an approach has largely fallen out of favor, in part because it has been found that the relaxation training component of the treatment was often not necessary and in part because of updated theories regarding the mechanisms responsible for change in exposure therapies [41–43]. Today exposure-based treatments generally have four basic phases (1) instruction, (2) hierarchy development, (3) exposure proper, (4) generalization and maintenance.

1. **Instruction.** In the instruction phase, the parent and child are presented with the rationale for exposure treatment. This would often include a learning based rationale – that is, that past avoidance has been negatively reinforced with the reduction of anxiety thereby increasing the likelihood of future avoidance and escape during the peak of their fear. As such, there is little opportunity to learn the feared stimulus is in fact innocuous. A cognitive rationale emphasizing the role of increased self-efficacy and the development of more accurate and adaptive cognitions, may also be included, helping the child and parent to understand that exposure without avoidance will show the child that he or she has the skills to cope with the feared situation. It is also important that the instruction phase include basic information on the understanding of fear and anxiety as many anxious children, and perhaps their parents, at least implicitly expect the anxiety to increase interminably and to spiral out of control with prolonged exposure. For this reason, the child and parents need to understand the nature of anxiety and that it will peak and then decrease with prolonged exposure.
2. **Development of a hierarchy.** Once the child and parents understand the rationale for exposure therapy the next step is typically to develop a graded hierarchy of feared situations that can realistically be used for exposure sessions. More specially, an exposure hierarchy consists of a series of anxiety provoking situations arranged from the least anxiety provoking to the most. It is important to make sure that enough steps are included in the hierarchy so that each step represents a *gradual* progression from the previous step and that the hierarchy as a whole captures all the components necessary to illicit the fear response in the child. For example, a child experiencing social anxiety may need to include steps in his or her hierarchy that include overt criticism in order to evoke an anxiety response and allow for habituation and the development of an increased perception of self-efficacy. Importantly, it may be necessary to include steps in the hierarchy that are more anxiety provoking than those the child may ever realistically be expected to face.
3. **Exposure proper.** In this step the child is exposed to each of the situations in the hierarchy until the anxiety dissipates. Modeling by the therapist, in which the therapist first engages in the anxiety provoking task allowing the child to watch, may precede direct engagement by the child. Attention should be paid to both within session habituation (e.g., decrease in subjective distress or indicators of physiological arousal) and between session habituation, as these have been found to be predictive of outcome [43–45]. Exposure may be in-vivo or imaginal, although in most cases in-vivo exposure is generally preferred and more effective. When circumstances do not allow for in-vivo exposures (e.g., repeated flights for a child with a fear of flying), virtual-reality based exposures may prove to be a useful alternative when available. During this phase, elimination of avoidance or escape

behaviors is emphasized in order to facilitate exposure and allow the child a return to normal activities [28].

4. **Generalization and maintenance.** In order to generalize treatment gains across situations the child is usually given homework assignments to repeat exposures that are mastered in session across similar situations outside of the therapy room. In addition to allowing for generalization, these activities allow for solidification of the skills learned in session, and ensure that the child does not see the presence of the therapist as necessary to the control of the anxiety. Once the child has progressed through the entire hierarchy and anxiety has significantly dissipated, planning for termination and maintenance begins. Given that anxiety and stressful situations are a normal part of life, termination should be considered when treatment goals are achieved and anxiety appears to be within normal levels for the child's developmental level. Depending on the age of the child, this phase would include giving the child or parent increasing responsibility for planning exposure or cognitive restructuring exercises when new challenges present themselves. Planning for stressful situations and providing the child with written materials that can be used to reinforce and review skills after the termination of therapy can be helpful [46]. Moreover, current research on the mechanisms involved in the extinction of anxious responses suggests several important avenues for planning for relapse prevention. This may include increasingly conducting exposure sessions outside of the typical therapy context (i.e., in real life situations in which the client might expect a relapse) and providing the child with a physical or cognitive cue of the exposure sessions in order to facilitate retrieval of the nonanxious learning that took place during treatment sessions [47–51].

Skills Training and Behavioral Rehearsal

There is some debate about whether children with anxiety disorders evidence true skills deficits (e.g., social skills deficits, lack of test-taking skills, emotion regulation skill deficits) or whether they possess these skills but are unable to effectively use them because of the interference engendered by their anxiety. However, because the research is equivocal, many CBT treatments for child anxiety include a skills training component. In early phases, this training may be very didactic and psychoeducational but learning is often reinforced with modeling by the therapist and behavioral rehearsal. Behavioral rehearsal is coupled with reinforcement by the therapist, oftentimes social reinforcement in the form of praise and positive feedback that is gradually phased out in favor of self-reinforcement.

Conclusions and Future Directions

CBT for child anxiety disorders has a rich history dating back to the beginnings of the behavioral movement in the 1920s. These treatments were unique in their strong ties to both theory *and* empiricism. Today, over 40 randomized clinical trials support the efficacy of CBT for the treatment of anxiety disorders in children and adolescents. These studies find that the majority of youth with anxiety disorders treated with CBT will see substantial benefits. Moreover, the effects seen in these studies suggest that changes are clinically significant as well as statistically significant. Further, CBT is a time-limited skills building treatment and this has important implications for families. This means that children can expect relief from symptoms within a relatively brief period (e.g., three to four months) and that the need for a therapist can be phased out as the child and family master the requisite skills. Continued improvement does not depend on regular meetings with the therapist; in fact, follow-up studies suggest that many children who see benefits from CBT will maintain their treatment gains and continue to improve even after treatment has formally terminated [20, 52]. These characteristic have the potential to make CBT for child anxiety

stand-out amongst other treatment options for its high potential benefit and relatively low costs.

Given the preponderance of evidence in support of CBT as an evidence-based treatment for child anxiety, future research needs to move beyond the basic question of whether CBT works. Although clinicians in practice must adapt traditional CBT methods to a child or adolescent's developmental level and other contextual factors, little systematic research is available to guide these decisions. Moreover, additional work is needed to establish the mediators and moderators of treatment outcome – essentially for whom is CBT more or less effective and why does CBT for child anxiety work. Further, although some work has been done to guide clinicians in treatment resistant cases, additional studies are needed to guide clinician decision-making when first-line CBT treatments do not work. Finally, although studies suggest that CBT should represent a first-line treatment for children presenting with an anxiety disorder, it is rarely the case that these children receive CBT at any point in their treatment. This seems to be the case even when families see a clinician claiming to use CBT. Therefore, additional empirical work is needed to guide the training and supervision of student clinicians and to investigate effective means of disseminating knowledge of CBT treatments and treatment advances to those already in clinical practice.

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Table 1

Summary of treatment studies.

Authors Year	N	Age (in years)	Diagnosis or Symptom Clusters	Treatment Conditions	Results
Kendall (1994) ^[23]	47	9–13	OAD, SAD, AD	CBT WL	CBT was superior to WL
Barrett et al. (1996) ^[53]	79	7–14	SAD, OAD, SOC	CBT + family treatment WL	Both treatments were better than WL. Some measures showed marginal improvements with addition of family treatment component.
Kendall & Southam-Gerow (1996) ^[52]	36	11–18	OAD, SAD, AD	CBT – follow-up study	Treatment gains were generally maintained after approximately 3 years.
Kendall et al. (1997) ^[38]	94	9–13	OAD, SAD, AD	CBT WL	CBT was superior to WL
Kendall & Sugarman (1997) ^[54]	190	8–14	OAD, SAD, AD	Examined termination in CBT	Termination more likely for ethnic minority children, children who were less anxious, and children living in a single-parent household.
Barrett (1998) ^[55]	60	7–14	SAD, OAD, SOC	CBT – group CBT + family treatment – group WL	Both treatments were better than WL. Some measures showed marginal improvements with addition of family treatment component.
Cobham et al. (1998) ^[56]	67	7–14	SAD, OAD, GAD, SPEC, SOC, AG	CBT CBT + family treatment	The addition of family treatment was beneficial only in cases in which there was significant parental anxiety.
De Haan et al. (1998) ^[57]	22	8–18	OCD	BT Clomipramine	BT was superior to clomipramine on some measures; on others the two treatments were not different.
King et al. (1998) ^[58]	34	5–15	School refusal	CBT + parent and teacher training WL	CBT was superior to WL.
Last et al. (1998) ^[59]	56	6–17	School refusal	CBT Attention control treatment	Both treatments were effective; no differences between treatments.
Muris et al. (1998) ^[60]	26	8–17	SPEC	EMDR – In-vivo exposure Computerized exposure	In vivo-exposure superior to computerized exposure and EMDR.
Mendlowitz et al. (1999) ^[61]	62	7–12	Any anxiety disorder	CBT – parent only CBT – child only CBT – parent + child	All treatments were effective; some benefits with parental involvement.
Silverman et al. (1999) ^[62]	81	6–16	SPEC, SOC, AG	Exposure based self control treatment Exposure based contingency management Education support	All groups showed improvement.
Silverman et al. (1999) ^[63]	56	6–16	GAD, SOC, OAD	CBT – Group WL	CBT superior to WL.

Authors Year	N	Age (in years)	Diagnosis or Symptom Clusters	Treatment Conditions	Results
Beidel et al. (2000) ^[64]	67	8–12	SOC	CBT Active, non-specific treatment	CBT was superior to non-specific treatment.
Berman et al. (2000) ^[65]	106	6–17	SPEC, OAD, SOC, GAD, AG	CBT	Best predictors of treatment outcome were child's pretreatment levels of anxiety and depression and parental depression, hostility, and paranoia; however, effects of parental psychopathology were weaker for older children.
Flannery-Schroeder & Kendall (2000) ^[66]	37	8–14	GAD, SAD, SOC	CBT – Individual CBT – Group WL	Most measures suggested that both CBT treatments were better than WL but not different than each other.
Hayward et al. (2000) ^[67]	35	13–17	SOC	CBT – Group No treatment control	CBT was more effective than no treatment at posttreatment but not at 1 year follow-up. CBT did seem to decrease risk of relapse of depression for those who had already experienced a major depressive episode
King et al. (2000) ^[68]	36	5–17	PTSD	CBT CBT + family treatment WL	Both treatments were superior to WL but the additional family treatment did not add significant benefit.
Spence et al. (2000) ^[69]	50	7–14	SOC	CBT CBT + family treatment WL	Both treatments were superior to WL but the additional family treatment did not add significant benefit. Treatment gains were generally maintained after approximately 1 year.
Barrett et al. (2001) ^[70]	52	13–21	SAD, OAD, SOC	CBT CBT + family treatment – follow-up study	Treatment gains were generally maintained after approximately 6 years. Most measures did not show differences between the two treatments.
Kendall et al. (2001) ^[71]	173	8–13	GAD, SOC, SAD	Examined comorbidity in CBT and WL	Comorbidity did not predict treatment outcome or interact with treatment group.
Muris et al. (2001) ^[72]	36	8–13	GAD, SAD, SOC, OCD	CBT CBT – Group	Treatments were about equally effective.
Ost et al. (2001) ^[73]	60	7–17	SPEC	CBT CBT + Parent WL	Both treatments were effective but not different than one another; treatment gains maintained at approximately 1 year.
Shott et al. (2001) ^[39]	71	6–10	SAD, SOC, GAD	CBT + family treatment –group WL	CBT was superior to WL
Southam-Gerow et al. (2001) ^[74]	135	7–15	SAD, GAD, SOC, AD	Examined correlates of outcome in CBT	Poorer treatment outcome was related to older age at treatment, more internalizing symptoms at pretreatment, and higher levels of maternal depression. Most demographic variables did not predict outcome.
Waters et al. (2001) ^[75]	7	10–14	OCD	CBT + family treatment	Six of the seven youth were diagnosis free at posttreatment.
Ginsburg & Drake (2002) ^[22]	9	14–17	Any anxiety disorder except PTSD or OCD	CBT Attention Control Placebo	CBT was superior to placebo.

Authors Year	N	Age (in years)	Diagnosis or Symptom Clusters	Treatment Conditions	Results
Heyne et al. (2002) ^[76]	61	7–14	Anxiety-based school refusal	CBT Parent and teacher training CBT + Parent and teacher training	All treatments were effective but CBT for the child only was not as good at increasing school attendance in the short-term. The combined treatment did not result in a significant benefit.
Manassis et al. (2002) ^[77]	78	8–12	GAD, SAD, SPEC, SOC, PD	CBT CBT – Group	Few differences between the two treatments.
Muris et al. (2002) ^[78]	30	9–12	SAD, GAD, SOC	CBT – Group Emotional disclosure WL	CBT superior to emotional disclosure and WL; emotional disclosure and WL did not result in significant improvements.
Nauta et al. (2003) ^[79]	79	7–18	SAD, SOC, GAD, PD	CBT CBT + family treatment WL	CBT treatments were both superior to WL.
Pina et al. (2003) ^[80]	131	6–16	SPEC, SOC, AG, GAD, OAD	Examined ethnicity as a predictor of treatment outcome in CBT	Treatment outcomes and maintenance of treatment gains were similar for Latino and European-American youth.
Rapee (2003) ^[81]	165	7–16	SAD, GAD, SOC, SPEC, OCD, PD	CBT + family treatment – Group	Treatment was about equally effective for youth with or without comorbid disorders.
Barrett et al. (2004) ^[82]	77	7–17	OCD	CBT + family treatment – Individual CBT + family treatment – Group WL	Both treatments were effective but not different than one another.
Flannery-Schroder et al (2004) ^[83]	38	15–22	GAD, SAD, AD either with or without a comorbid externalizing disorder	CBT – follow-up study	Treatment was about equally effective for both those with and without an externalizing disorder at approximately 7 ½ years.
Gallagher et al. (2004) ^[84]	23	8–11	SOC	CBT – Group WL	Treatment was effective even through it was abbreviated (3 weeks).
Kendall et al. (2004) ^[85]	86	15–22	OAD, SAD, AD	CBT – follow-up study	Treatment gains were generally maintained after approximately 7 ½ years.
Manassis et al. (2004) ^[86]	43	Mean = 16.5	Any anxiety disorder	CBT – follow-up study	Males, youth diagnosed with GAD, and those with less severe anxiety at pretreatment had better outcomes at 6–7 year follow-up.
POTS Team (2004) ^[87]	112	7–17	OCD	CBT Sertraline, CBT + sertraline Pill placebo	All active treatments better than placebo, combined treatments better than CBT or sertraline alone; CBT and sertraline did not differ.
Asbahr et al. (2005) ^[88]	40	9–17	OCD	CBT-Group Sertraline	Both treatments were effective but CBT resulted in lower relapse rates.
Baer & Garland (2005) ^[89]	12	13–18	SOC	CBT – Group WL	CBT was superior to WL
Beidel et al. (2005) ^[90]	29	11–18	SOC	CBT – follow-up study	Treatment gains were generally maintained after approximately 3 years.
Berstein et al. (2005) ^[91]	61	7–11	SAD, GAD, or SOC	CBT – Group CBT + Parent training – Group	Both treatments were effective, some benefit with addition of parent training.

Authors Year	N	Age (in years)	Diagnosis or Symptom Clusters	Treatment Conditions	Results
Flannery-Schroder et al. (2005) ^[92]	30	9–15	SAD, GAD, or SOC	No treatment control CBT CBT – Group	Treatment was about equally effective for both groups at approximately 1 year.
Masia-Warner et al. (2005) ^[93]	35	13–17	SOC	CBT – Group WL	CBT superior to WL.
Beidel et al. (2006) ^[94]	31	13–20	SOC	CBT – follow-up study	Treatment gains were generally maintained after approximately 5 years. Treated group was not different on a number of measures than youth who had never had social phobia.
Lynham & Rapee (2006) ^[95]	100	6–12	GAD, SAD, SOC, OCD, SPEC, PD	CBT – Bibliotherapy + e-mail contact CBT – Bibliotherapy + telephone contact CBT – Bibliotherapy + client initiated contacts WL	Bibliotherapy with therapist initiated telephone contact produced the best outcomes.
Rapee et al. (2006) ^[96]	267	6–12	GAD, SOC, SAD, SPEC, OCD, PD	CBT – Group CBT – Bibliotherapy WL	Both treatments superior to WL but bibliotherapy not as effective as standard CBT.
Spence et al. (2006) ^[97]	72	7–14	GAD, SAD, SOC, SPEC	CBT CBT delivered through internet WL	Both treatments were superior to WL but not different than one another; gains maintained at approximately 1 year
Wood et al. (2006) ^[98]	40	6–13	SAD, GAD, SOC	CBT CBT + family treatment	Both treatments were effective; some evidence of additional benefit of family treatment.
Beidel et al. (2007) ^[99]	60	7–17	SOC	CBT Fluoxetine Placebo	Both treatments were superior to placebo but CBT was superior to fluoxetine and the only treatment better than placebo for improving social skills.
Chalfant et al. (2007) ^[100]	47	8–13	High Functioning Autism Spectrum Disorders + an anxiety disorder	Family based CBT – Group WL	CBT was effective in treating anxiety disorders in youth comorbid with high-functioning autism spectrum disorders.
de Groot et al. (2007) ^[101]	29	7–12	Any anxiety disorder	CBT CBT- Group	Treatments were about equally effective.
Levy et al. (2007) ^[102]	69	8–14	Aggression comorbid with SAD, GAD, SOC, SPEC, or PD	CBT – for anxiety only CBT – for anxiety and aggression	Both treatments were effective; no significant benefit with the combined treatment.
March et al. (2007) ^[103]	112	7–17	OCD with or without comorbid tics	CBT Sertraline SBT +sertraline Placebo	Medication alone was less effective for youth with tics; comorbid tics did not negatively affect outcomes for CBT. In general the combination treatment resulted in the best outcome for youth with or without tics.
Masia-Warner et al. (2007) ^[104]	36	14–16	SOC	CBT – Group Attention control	CBT superior to attention control treatment.
Smith et al. (2007) ^[105]	24	8–18	PTSD	CBT WL	CBT superior to WL; outcome partially mediated by cognitive change.

Authors Year	N	Age (in years)	Diagnosis or Symptom Clusters	Treatment Conditions	Results
Storch et al. (2007) ^[106]	40	7–17	OCD	CBT – Intensive CBT – Weekly	Some short-term advantage for the intensive treatment but both treatments about equal at three months posttreatment.
Victor et al (2007) ^[107]	61	7–11	SAD, GAD, or SOC	CBT – Group No treatment control	Higher family cohesion was related to better outcome in CBT group.
Berstein et al. (2008) ^[26]	61	7–11	SAD, GAD, or SOC	CBT – Group CBT + Parent training -Group No treatment control	Treatment gains were generally maintained after approximately 1 year; some evidence of added benefit with addition of parent training.
Kendall et al (2008) ^[108]	161	7–14	SAD, SOC, GAD	CBT Family based CBT Family based education support	CBT groups were superior to family based support in reducing principal anxiety disorder. Individual CBT was superior to family based CBT on some measures but family based CBT was superior to individual CBT if both parents had an anxiety disorder.
Warner et al. (2009) ^[109]	7	8–15	Anxiety disorder + somatic complaints	CBT	All children responded to treatment.
Waters et al. (2009) ^[110]	60	4–8	SPEC, SOC, GAD, SAD	CBT – Parent only CBT – Parent + child WL	Both treatments superior to WL but not significantly different than one another; gains were generally maintained after approximately 1 year.
Cobham et al. (2010) ^[111]	60	10–17	SAD, OAD, GAD, SPEC, SOC, AG	CBT CBT + family treatment – follow-up study	Children were more likely to be diagnosis free at 3 year follow-up if they had been in the CBT + family treatment condition, regardless of parents' level of anxiety at pretreatment.
Garcia et al. (2010) ^[112]	112	7–17	OCD	CBT Sertraline CBT + Sertraline Placebo	Less severe OCD, fewer externalizing symptoms, less family accommodation, and more insight was predictive of better treatment outcome.

Note: AD = avoidant disorder, AG = agoraphobia, BT = behavior therapy, CBT = cognitive-behavioral therapy, EMDR = eye movement desensitization and reprocessing therapy, GAD = generalized anxiety disorder, n = sample size, OAD = overanxious disorder, OCD = obsessive-compulsive disorder, PD = panic disorder, PTSD = post-traumatic stress disorder, SAD = separation anxiety disorder, SOC = social phobia, SPEC = specific phobia, WL = waitlist.