

Current status and future directions

This article reviews research on the outcomes of cognitive-behavioral therapy (CBT) for anxiety disorders in youth. The various formats of CBT are described, and future directions are offered.

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ABSTRACT:

A review of cognitive-behavioral therapy for anxiety disorders in children and adolescents: Current status and future directions

This article reviews research on the outcomes of cognitive-behavioral therapy (CBT) for anxiety disorders in youth. It reviews individual and group CBT approaches, both of which have been deemed to be probably efficacious treatments (Silverman, Pina, & Viswesvaran, 2008). Possibly efficacious and experimental treatments, including family CBT, school-based CBT programs, and computer-assisted CBT protocols, are also discussed. Future directions are offered, including the call to examine moderators and mediators of treatment outcome and to facilitate bridging the gap between research and practice.

Keywords: anxiety disorders, children, adolescents, cognitive-behavioral therapy (CBT); efficacy, randomized clinical trial (RCT).

Anxiety disorders are among the most common childhood psychological disorders (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Research suggests that childhood anxiety disorders are associated with impairment in multiple domains, and do not remit with the passage of time (Pine, Cohen, Gurley, Brook, & Ma, 1998). If the anxiety is left untreated, anxiety-disordered youth are at increased risk for other mental health concerns, such as depression and substance use disorders later in life (Woodward & Fergusson, 2001). The continued development and evaluation of efficacious treatments for childhood anxiety disorders is critical given the impairment and negative sequelae associated with these disorders.

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Cognitive-behavioral therapy (CBT) for anxiety disorders in youth integrates behavioral techniques (e.g., exposure tasks, relaxation training, homework, contingencies, modeling) with an emphasis on the cognitive (e.g., social information processing) components of anxiety. The goals of treatment are to teach youth to recognize the bodily signs of anxious arousal and to use these signs as cues to engage in anxiety management. The American Psychological Association Task Force on Promotion and Dissemination of Psychological Procedures (1995) published criteria for use in determining empirically-supported treatments (see also Chambless & Hollon, 1998). The Task Force described categories of empirically-supported treatments based on these criteria including «Well Established,» «Probably Efficacious,» «Possibly Efficacious,» and «Experimental.» To be considered probably efficacious, a treatment must be found to be superior to a waitlist condition in two separate randomized clinical trials (RCTs) by independent investigators. Based on earlier reviews (e.g., Kazdin & Weisz, 1998; Ollendick & King, 1998; Silverman, Pina, & Viswesvaran, 2008) of reported studies, individual and group CBT for youth anxiety disorders can be considered probably efficacious according to Chambless and Hollon's criteria. Given the recent report by Walkup et al. (2008), individual CBT may soon be described as an established efficacious treatment. Other forms of CBT for youth anxiety, such as school-based treatments, may be considered to be possibly efficacious or experimental according to these criteria.

The present review examines the existing evidence for individual child-focused, group, family, school-based, and computer-assisted CBT for anxiety disorders in youth (see Table 1). The literature reviewed here was identified from previous reviews as well as via computerized databases (Psyc-Info and PubMed) using the following key words: cognitive-behavioral therapy, treatment, anxiety, child, adolescent, individual, group, family, school, and computer. Though CBT treatments have been developed for other anxiety disorders in youth (e.g., Obsessive-Compulsive Disorder [OCD], Post-Traumatic Stress Disorder [PTSD]), the current review focuses on treatments for the more prevalent DSM-IV anxiety disorders in youth: Separation Anxiety Disorder (SAD), Generalized Anxiety Disorder (GAD), and Social Phobia (SOP). Mediators and moderators of outcome, the effects of comorbidities on treatment outcome, the effect of length or «dose» of treatment on outcome, and the long-term effects of CBT compared to medications are discussed and considered as directions for future research on CBT for anxiety disorders in children and adolescents.

TABLE 1. CHARACTERISTICS OF COGNITIVE-BEHAVIORAL TREATMENTS FOR CHILD AND ADOLESCENT ANXIETY DISORDERS

Study	N	Ages	Diagnoses	Conditions	% Diagnostic Recovery
Barrett (1998)	60	7-14	OAD, SAD, or SOP	G vs. G+F vs. WL	55.9% vs. 70.7% vs. 25.2% ^a
Barrett, Dadds, & Rapee (1996)	79	7-14	OAD, SAD, or SOP	I vs. I+F vs. WL	57.1% vs. 84.0% vs. 26.0%
Beidel, Turner, & Morris (2000)	67	8-12	SOP	G+I vs. AC	67% vs. 5%
Bögels & Siqueland (2006)	17	8-17	AD other than OCD or PTSD	F vs. WL	46% vs. 0%
Cunningham et al. (2009)	5	14-16	GAD or SAD	C	40%
Flannery-Schroeder & Kendall (2000)	37	8-14	GAD, SAD, or SOP	I vs. G vs. WL	73% vs. 50% vs. 8%
Ginsburg & Drake (2002)	12	14-17	GAD, SOP, or SP	SG vs. AC	75% vs. 20%
Hudson et al. (2009)	112	7-16	GAD, SAD, SOP, SP, OCD, or PD	G vs. AC	45.1% vs. 29.6%
Kendall (1994)	47	9-13	AVD, OAD, SAD	I vs. WL	64% vs. 5%
Kendall et al. (1997)	94	9-13	OAD-GAD, SAD, or AVD-SOP	I vs. WL	53.2% vs. 6%
Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg (2008)	161	7-13	GAD, SAD, or SOP	I vs. F vs. AC	57% vs. 55% vs. 37%
Khanna & Kendall (in press)	49	7-13	GAD, SAD, SOP, SP, or PD	C vs. I vs. AC	81% vs. 70% vs. 19%
Manassis et al. (2002)	78	8-12	GAD, SAD, SOP, SP, or PD	I+P vs. G+P	-
March, Spence, & Donovan (2009)	63	7-12	GAD, SAD, SOP, or SP	C vs. WL	30% vs. 10.3%

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Masia Warner et al. (2005)	35	13-17	SOP	SG vs. WL	67% vs. 6%
Masia Warner, Fisher, Shrout, Rathor, & Klein (2007)	36	14-16	SOP	SG vs. AC	59% vs. 0%
Masia, Klein, Storch, & Corda (2001)	6	14-17	SOP	SG	50%
Mendlowitz et al. (1999)	62	7-12	any AD	G+P vs. G vs. P vs. WL	-
Muris, Meester, & van Melick (2002)	30	9-12	GAD, SAD, or SOP	SG vs. WL	-
Nauta, Scholing, Emmelkamp, & Minderaa (2003)	79	7-18	GAD, SAD, SOP, or PD	I vs. I+P vs. WL	54% vs. 59% vs. 10%
Rapee, Abbott, & Lyneham (2006)	267	6-12	GAD, SAD, SOP, SP, OCD, or PD	G+F vs. B vs. WL	61.1% vs. 25.9% vs. 6.7% ^a
Silverman et al. (1999)	56	6-16	OAD, SAD, or SOP	G+P vs. WL	64% vs. 13%
Spence, Donovan, & Brechman-Toussaint (2000)	50	7-14	SOP	G vs. G+P vs. WL	58% vs. 87.5% vs. 7%
Spence, Holmes, March, & Lipp (2006)	72	7-14	GAD, SAD, SOP, or SP	G vs. G+C vs. WL	65% vs. 56% vs. 13%
Walkup et al. (2008)	488	7-17	GAD, SAD, or SOP	I vs. M vs. I+M	59.7% vs. 54.9% vs. 80.7% ^b
Wood, Piacentini, Southam-Gerow, Chu, & Sigman (2006)	40	6-13	GAD, SAD, or SOP	F vs. I	78.9% vs. 52.6% ^c

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Note: A dash indicates that this was not reported in the article. N is the number of youth who met the study's inclusion criteria for participation and participated in the intervention. % diagnostic recovery is based on number of completers no longer meeting DSM criteria for their principal anxiety disorder diagnosis at posttreatment.

In diagnoses column: AD = anxiety disorder; AVD = Avoidant Disorder; GAD = Generalized Anxiety Disorder; OAD = Overanxious Disorder; OCD = Obsessive-Compulsive Disorder; PD = Panic Disorder; PTSD = Post-Traumatic Stress Disorder; SAD = Separation Anxiety Disorder; SOP = Social Phobia; SP = Specific Phobia

In conditions column: AC = active control; B = bibliotherapy; C = computer-assisted; F = family; G = group; G+C = group plus computer; G+F = group plus family; G+I = group plus individual; G+P = group plus parent; I = Individual; I+M = individual plus medication; I+F = individual plus family; I+P = individual plus parent; M = medication; P = parent group; SG = school-based group; WL = waitlist

a% free of all anxiety disorders

b diagnostic recovery assessed by Clinical Global Impression- Improvement Scale

c% free of GAD, SAD, and SOP

Individual child-focused CBT

There are several versions of child-focused CBT that are appropriate for youth. The initial approach, the *Coping Cat* program, will be reviewed in some detail. Following consideration of this oft-studied and oft-translated approach, we also review, though in less detail, other versions of CBT for anxiety in youth.

The Coping Cat program

The *Coping Cat* (Kendall & Hedke, 2006; or *C.A.T. Project* for teens) is a 16-session individual child-focused manual-based treatment for anxiety-disordered youth. The *Coping Cat* is designed for use with youth with a principal anxiety disorder diagnosis of SAD, GAD, and/or SOP. The first eight sessions of the program focus on teaching skills to the child (psychoeducation), and the final eight sessions provide the child with the opportunity to practice these skills (exposure tasks). The psychoeducation component of the *Coping Cat* focuses on building four basic skill areas: awareness of physiological reactions to anxiety; recognition and modification of anxious «self-talk»; problem solving skills, including developing plans for coping; and self evaluation and reward. During the exposure tasks, youth practice the learned skills in a hierarchy of actual anxiety-provoking situations.

The literature includes several reports of RCTs, conducted in Philadelphia, Pennsylvania, that have evaluated the efficacy of the *Coping Cat* program for child anxiety. An initial RCT found greater diagnostic recovery rates and greater improvements on self-report measures for youth who received CBT compared to youth

in the waitlist control condition (Kendall, 1994). Treatment gains were maintained at a 3 year follow-up (Kendall & Southam-Gerow, 1996).

A second RCT with 94 anxiety-disordered youth aged 9 to 13 years replicated these findings (Kendall et al., 1997). A 7 year follow-up of 91 % of the participants from this RCT revealed long-term maintenance of treatment gains (Kendall, Safford, Flannery-Schroeder & Webb, 2004). At long-term follow-up, there was also evidence that participants who were treatment responders at posttreatment were less likely to use substances and had fewer negative consequences of substance use than participants who did not respond to treatment.

A third RCT compared the relative efficacy of individual CBT (ICBT), family CBT (FCBT) and a family-based education/support/attention (FESA) control condition in 161 youth aged 7 to 13 years with a principal diagnosis of SAD, SOP, or GAD (Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008). Participants in all conditions experienced pre- to post-treatment improvement. The ICBT and FCBT conditions were superior to FESA in terms of treatment response – youth in the ICBT and FCBT were more likely to have a principal anxiety disorder (i.e. anxiety disorder that is most interfering and the target for treatment) that was no longer clinical or no longer principal at posttreatment. ICBT was superior to FCBT and FESA on teacher reports of child anxiety. However, FCBT was superior to ICBT for participants with parents with anxiety disorders. Treatment gains were maintained at a one-year follow-up.

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A large multi-site RCT evaluated CBT and medication in 488 youth aged 7 to 17 years with a principal diagnosis of GAD, SAD, or SOP (Walkup et al., 2008). The study, conducted in six cities across the United States, compared ICBT (*Coping Cat*), medication (sertraline), and their combination, to a pill placebo. The *Coping Cat* was implemented for children whereas the *C.A.T. Project* (Kendall, Choudhury, Hudson, & Webb, 2002a; 2002b) was used for adolescents. The CBT condition involved 14 sessions implemented within 12 weeks. All three treatments demonstrated greater improvement than the pill placebo. However, the combination of ICBT and medication produced a higher response rate (81 %) based on the Clinical Global Impression Improvement Scale than either ICBT (60 %) or medication (55 %) alone. The pattern of results was similar for the Pediatric Anxiety Rating Scale. The study authors suggest that «additive or synergistic effects» of the two monotherapies might explain the superior response in the combination condition. However, they allow that additional contact time and expectancy effects may also explain the superiority of the combination condition. The

authors concluded that all three active treatments were effective, and that ICBT may now be considered a well-established treatment.

Other individual CBT programs

Additional evidence for the efficacy of ICBT has been provided by researchers in Australia (e.g., Barrett, Dadds, & Rapee, 1996) and the Netherlands (e.g., Nauta, Scholing, Emmelkamp, & Minderaa, 2003). Barrett and colleagues (1996) found better diagnostic recovery rates for youth with a principal diagnosis of SAD, GAD or SOP when adding a parent training intervention to their ICBT condition. Nauta and colleagues (2003) found no added benefit in terms of diagnostic recovery of pairing a parent training component with ICBT for youth with a principal diagnosis of SAD, SOP, GAD, or panic disorder.

Group CBT

With the potential of cost-effectiveness, there have been group format applications and evaluations of CBT. The group format reduces clinician time yet allows numerous children and parents to participate. According to Silverman et al. (2008), child-focused group CBT (GCBT), GCBT with parents, GCBT for SOP, and Social Effectiveness Training for Children (SET-C) are probably efficacious treatments.

GCBT versus ICBT

Flannery-Schroeder and Kendall (2000) reported data on the relative efficacy of ICBT and GCBT for youth between the ages of 8 and 14 with a principal diagnosis of GAD, SAD, or SOP. Youth in the ICBT condition received the *Coping Cat* whereas youth in the GCBT condition received a group-adapted version of the *Coping Cat* (Flannery-Schroeder & Kendall, 1996). Both treatment conditions demonstrated greater improvements compared to a waitlist control. No differences were found between ICBT and GCBT. Maintenance of treatment gains was reported at a one-year follow-up (Flannery-Schroeder, Choudhury, & Kendall, 2005).

In Canada, Manassis and colleagues (2002) reported similar results when comparing ICBT and GCBT for 8–12 year-old youth with SAD, GAD, SOP, Specific Phobia (SP), or Panic Disorder (PD). The ICBT was a 12-session treatment based on the *Coping Cat* program. The GCBT used the *Coping Bear Workbook* (Scapillato & Mendlowitz, 1993). Parents participated in treatment in both conditions and were guided by *Keys to Parenting Your Anxious Child* (Manassis, 1996). Both treatments resulted in significant improvements on various self-report measures. ICBT and GCBT did not significantly differ from each other with the exception of greater improvement in depressive symptoms and global functioning in the ICBT condition.

GCBT versus alternative treatments

Research supports greater efficacy of GCBT compared to alternative treatments. In Australia, Rapee, Abbott, and Lyneham (2006) found a significantly greater diagnostic

recovery rate in their *Cool Kids* (Rapee & Wignall, 2002) GCBT group compared to bibliotherapy and waitlist groups. The bibliotherapy group outperformed the waitlist but did not yield as much improvement as GCBT. A recent study by Hudson and colleagues (2009), also conducted in Australia, found greater diagnostic recovery rates in youth who received GCBT compared to youth in a group support and attention (GSA) condition which removed CBT components and instead focused on understanding emotion and improving family relations. Note that the GSA condition may not constitute an optimal comparison group given that it was rated by parents as less credible than CBT. However, given that credibility was found to be unrelated to outcome, one can have some confidence in the greater benefit of CBT over supportive treatments.

GCBT with parents

Barrett (1998), in Australia, investigated the relative efficacy of GCBT, GCBT with parents (GCBT+P), and a waitlist control condition. The GCBT condition followed the *Coping Koala Group Workbook* (Barrett, 1995a; an Australian adaptation of the *Coping Cat*). Children in the GCBT+P met weekly to complete the *Coping Koala Group Workbook* and also participated in a group with their parents following the *Group Family Anxiety Management Workbook* (Barrett, 1995b). At posttreatment, both GCBT conditions were significantly different from waitlist but there were no significant differences between the two GCBT conditions based on diagnostic recovery status and self report measures. Treatment gains were maintained at a one-year follow-up. Similar findings on GCBT+P have been found by other researchers (Mendlowitz, et al., 1999; Manassis, Avery, Butalia, & Mendlowitz, 2004; Silverman et al., 1999).

GCBT specific for SOP

The bulk of the studies evaluating the group treatment format have included heterogeneous samples of children with a variety of anxiety disorders. However, GCBT has also been developed specifically for children with SOP, and these SOP treatments have been deemed probably efficacious (Silverman et al., 2008). Spence, Donovan, and Brechman-Toussaint (2000) found significantly more children free of the diagnosis of SOP following participation in either GCBT or GCBT with parental involvement (GCBT-PI) compared to a waitlist with no significant differences found between the two active conditions. Treatment gains were maintained at six- and 12-month follow-ups.

SET-C

Social Effectiveness Training for Children (SET-C), which involves 12 group and 12 individual sessions, is also considered to be a probably efficacious treatment (Silverman et al., 2008). In Maryland, Beidel, Turner, and Morris (2000) developed and evaluated this treatment for 8–12 year old socially phobic youth. Their initial study found higher diagnostic recovery rates for youth who participated in SET-C compared to youth who participated in Testbusters, a study skills and test-taking strategy program. In the SET-C condition, diagnostic recovery rate rose from 67 % at posttreatment to 85 % at a six-

month follow-up. A three-year follow-up found maintained gains on most measures (Beidel, Turner, Young, & Paulson, 2005).

Family-based CBT

Family CBT (FCBT) protocols have been developed based on the assumption and supporting research evidence that parenting practices and family interactions can maintain anxiety in children (Chorpita & Barlow, 1998; Wood, McLeod, Sigman, Hwang, & Chu, 2003). Research on FCBT for anxious youth shows promising results, and FCBT is considered to be possibly efficacious (Silverman et al., 2008).

Bögels and Siqueland (2006) reported an evaluation, conducted in the Netherlands, comparing FCBT to a natural waitlist condition (i.e. assignment to waitlist based on therapist availability) for 17 youth ages 8 to 17 with a principal anxiety diagnosis other than OCD and PTSD. Although no change in diagnostic status occurred for children on the waitlist, diagnostic recovery rates for children receiving FCBT were 41 % at posttreatment, 57 % at the three-month follow-up, and 71 % at the one-year follow-up.

In Los Angeles, California, Wood, Piacentini, Southam-Gerow, Chu, and Sigman (2006) compared the relative efficacy of 12–16 sessions of FCBT and ICBT in 40 children diagnosed either with GAD, SAD, or SOP. The ICBT condition was largely consistent with the original *Coping Cat* program (Kendall, Kane, Howard, & Siqueland, 1990). The FCBT condition added a parent training component. Youth in both conditions demonstrated similar outcomes, which is consistent with the findings of Kendall et al. (2008).

School-based CBT

Offering CBT in the school setting may offer unique opportunities for detection and treatment of youth anxiety disorders. The non-clinical setting may reduce typical barriers to treatment, such as stigma (Catron & Weiss, 1994). Several researchers have evaluated school-based CBT programs for youth anxiety disorders. However, as noted by Silverman et al. (2008), given that none of the treatments have been evaluated in more than one research lab, and several lack statistical power and/or control conditions, they should all be considered experimental treatments at this time.

Skills for Academic and Social Success (SASS) Program

Promising results have been found in examinations of the *Skills for Academic and Social Success* (SASS) program. The SASS program is based in part on SET-C and Cognitive-Behavioral Group Therapy for Adolescents (GBCT-A; Albano, DiBartolo, Heimberg, & Barlow, 1995). An initial study by Masia, Klein, Storch, and Corda (2001) in New York evaluated SASS for six socially phobic adolescents. Following treatment, 50 % of the participants no longer met diagnostic criteria for SOP and all six adolescents showed moderate to marked improvement in terms of anxiety severity. Masia Warner and colleagues (2005) found greater diagnostic recovery rates for youth treated with SASS compared to youth in a waitlist control condition. A recent report (Masia Warner,

Fisher, Shrout, Rathor, & Klein, 2007) found greater diagnostic recovery rates in youth who received SASS compared to youth in an attention control condition.

Other School-based Programs

Additional school-based programs show promise. Ginsburg and Drake (2002) found better outcomes for anxiety-disordered African-American adolescents who received a school-based GCBT compared to youth in an active control condition. In Australia, Muris, Meesters, and van Melick (2002) found significant improvements in anxious symptomatology for youth in a GCBT condition relative to youth in the active and waitlist control conditions.

Computer-assisted CBT

Computer technology offers a novel format for the delivery of CBT for child anxiety. The advantages of computer-assisted treatment include cost-effectiveness, increased access to mental health services, and standardization of treatment content and delivery (Hofmann, 1999). Research demonstrates promise for the use of computer technology in the treatment of adult anxiety (e.g. Baer & Griest, 1997). Research is needed to understand the use of computer technology for the treatment of childhood anxiety. Computer-assisted CBT (CACBT) can be seen as experimental at this time. Nevertheless, the research available points to the potential benefits of CACBT.

In Australia, Spence, Holmes, March, and Lipp (2006) examined CACBT for 7–14 year old youth diagnosed with GAD, SAD, SOP, or SP. Youth were randomly assigned to GCBT, GCBT plus Internet (GCBT-I) or waitlist. GCBT-I had the same content as GCBT, but half of the sessions were delivered over the internet. At posttreatment, both treatment conditions demonstrated significantly greater improvement compared to the waitlist condition. Diagnostic recovery rates did not differ across treatment conditions. Treatment gains were maintained at six- and 12-month follow-ups. Of note, treatment satisfaction was rated highly and did not differ across the two treatment conditions. In a recent investigation, March, Spence, and Donovan (2009) found some support for the beneficial effects of the *BRAVE-ONLINE* program, an internet-delivered CBT program with minimal therapist support, as compared to a waitlist control.

Cunningham et al. (2009) reported a pilot study on the *Cool Teens CD-ROM* for anxiety in Australia. Five adolescents (four with GAD and one with SAD) completed the *Cool Teens CD-ROM* program which consisted of eight modules delivered over 12 weeks. Over the course of the 12 weeks, four participants completed at least six of the eight modules. At posttreatment, two participants (40 %) no longer met diagnostic criteria for at least one anxiety disorder. Treatment gains were maintained at the three-month follow-up. Of the three remaining participants, two demonstrated improvement on anxiety related to one main fear. All participants rated the program positively.

Kendall and Khanna (2008a; 2008b) developed *Camp Cope-a-Lot: The Coping Cat DVD* (CCAL). CCAL is targeted toward 7–13 year-old children with a variety of problems with anxiety (e.g., SAD, GAD, SOP). The CCAL program is based on the *Coping Cat* program.

CCAL was designed to be a computer-assisted CBT rather than a self-administered treatment. A therapist, who serves as the «coach,» oversees six of the 12 sessions – the exposure task sessions. A pilot study demonstrated the feasibility and acceptability of the CCAL (Choudhury & Kendall, 2005), and an RCT (Khanna & Kendall, in press) comparing CCAL, ICBT, and an education, support, and attention (ESA) control provides encouraging information. The results indicated higher diagnostic recovery rates in the CCAL and ICBT conditions compared to the ESA condition. The diagnostic recovery rates did not differ between children in the ICBT or CCAL conditions.

Moderators and mediators

In addition to examining CBT outcomes, researchers have begun examining moderators and predictors of outcome. Examination of moderators and predictors indicates who benefits most from CBT. Our recent work on this topic suggests the following: (a) the presence or absence of a diagnosis of a depressive disorder did not predict differential outcomes, but higher levels of self-reported depressive symptoms were associated with a less favorable outcome (O'Neil & Kendall, 2010); (b) the presence or absence of an externalizing disorder diagnosis did not predict outcomes, but coded inattention/hyperactivity in the initial sessions was found to be associated with greater gains (Edmunds & Kendall, 2010), and (c) although the sample did not include children with autism spectrum disorders, parent reports of moderate levels of autism spectrum features of the anxious youth were associated with a less favorable outcome in children who received ICBT as compared to FCBT (Puleo & Kendall, in press). It is worth noting that the participants improved, but there were differences in the magnitudes of the improvements.

Mediators of treatment, including the ingredients of therapy, therapy process variables, and resulting within-client processes, have also been examined. One ingredient of CBT – the exposure portion of treatment – has been identified as an important component mediating change (e.g., Kendall et al., 1997). Our recent work on the therapeutic process suggests that (a) the therapeutic alliance is not ruptured or damaged by the inclusion of challenging exposure tasks (Kendall et al., 2009), (b) observations of the therapist as a collaborator is associated with a favorable child perception of the therapeutic relationship (Creed & Kendall, 2005), (c) reductions in safety-seeking behavior are beneficial to outcome (Hedtke, Kendall, & Tiwari, 2009), and (d) therapist flexibility is related to child engagement in later sessions (Chu & Kendall, 2009). In terms of within-client processes, Kendall and Treadwell (2007; see also Treadwell & Kendall, 1996) found that reductions in negative self-talk (not positive self-talk) was a significant mediator of treatment gains (the «power of nonnegative thinking»; Kendall, 1984). Additionally, CBT produces gains in emotion regulation associated with anxiety (not anger or sadness) (Suveg, Sood, Comer, & Kendall, 2009).

Future directions

This review examined findings with regard to the efficacy of CBT for anxiety (i.e., GAD, SAD, SOP) in children and adolescents. It is pleasing to be able to conclude that the data

to date support the efficacy of CBT for improving anxiety in youth. It is encouraging that, on average, two thirds of the treated youth showed noteworthy benefit and that such positive treatment responses were maintained. It is also pleasing to identify and note the relative consistency of the positive response to treatment across studies. Despite the positive effects of treatment, there continues to be room for improvement, and several questions are, as yet, unanswered.

A compelling question concerns how to best address the needs of treatment non-responders. Although the diagnostic recovery rates reviewed are impressive, a meaningful group of participants retained their anxiety diagnoses following treatment completion. What are the characteristics of these individuals that might predict non-response to treatment? What are features of treatment that may contribute to non-response? The answers to such questions rely on further investigation of the predictors and moderators of treatment outcome. In one review of child and adolescent therapy research, Weisz and Jensen (2001) implored researchers to examine the potential moderators and predictors of treatment outcome. We have initiated such work in our clinic and we, not surprisingly, echo their call.

Comorbid conditions are worthy candidates of investigation as potential moderators or predictors of differential treatment outcome, especially considering that comorbidity is the rule rather than the exception (Kendall et al., 2010; Ollendick, Jarrett, Grills-Taquechel, Hovey, & Wolff, 2008). In their review of comorbidities, Ollendick et al. (2008) reported that only 16 out of 43 RCTs for child anxiety examined comorbidities as predictors or moderators of treatment outcome. Although 13 of these studies failed to find significant predictive or moderating influences of comorbidities, it is premature to make firm conclusions regarding the influence of comorbidities.

Given the diverse applications of CBT (i.e. individual, group, school, family, and computer formats), future research should examine whether comorbidities or other potential moderators influence outcome across different treatment formats. Future research can examine whether altering treatment to explicitly address comorbid conditions, which seems to be what is happening within the practice of CBT for anxious youth, actually produces greater diagnostic recovery rates than less flexible treatment protocols.

An equally important question concerns mediators of therapeutic gain. The effects of separate components of treatment are largely unknown. Past research is fairly consistent in supporting the importance of the exposure tasks within treatment for anxious youth (e.g., Kendall et al., 1997). Additional studies should investigate the importance of other common CBT components, such as problem-solving and relaxation. Knowledge regarding therapeutic processes is incomplete: research needs to examine the magnitude of the relationship between therapeutic alliance, child involvement, therapist flexibility, and outcomes and whether these relations differ across therapy formats. Lastly, within-client processes have largely been neglected. As the field expands, it is worthwhile for researchers to examine within-child mediators and others in order to inform effective therapy practice.

Consistent with the zeitgeist (i.e., need to disseminate efficacious treatments to the community), Weisz and Jensen (2001) implore us to work toward bridging the gap between lab-based research and clinic-based practice. An efficacious treatment will only be beneficial to anxious youth in the general population to the extent that it is offered and delivered appropriately in real-world clinics. Bridging this gap relies on conscientious efforts to both disseminate efficacious treatments (training) and provide supervision to help ensure that they are implemented with fidelity. Treatments that work require a degree of adherence to the underlying strategies/principles, but such treatments are not rigid cookbooks – there can be «flexibility within fidelity» when implementing a treatment protocol (Kendall & Beidas, 2007; Kendall, Gosch, Furr, & Sood, 2008). The bridging of research and practice, however, should not be a one-way undertaking. As clinicians learn efficacious treatments, researchers need to address the limitations and concerns that emerge within community practice. In order to meet economical and practical demands there is an increasing need for shorter treatments. If the brief approaches are found to be adequately beneficial, then a stepped care approach could be reasonable. If the brief treatments are as effective as longer ones, then the reduced number of sessions would be justifiable. Data is needed to inform this matter.

Walkup and colleagues (2008) reported that the greatest improvement in anxious youth was found for those who received a combination of CBT and medication. Future research should continue to explore the relative efficacy of CBT, medication, and the combination for specific anxiety disorders and over longer periods of follow-up.

Conclusion

It is pleasing to conclude, based on a broad set of evaluations, that the research on CBT for childhood anxiety yields an optimistic outlook. The research base is fairly consistent even as the methodology of the studies have added rigor (active control conditions). In 2008, Silverman and colleagues considered ICBT and GCBT to be probably efficacious treatments. Given the reports since that time (e.g., Kendall et al., 2008; Walkup et al., 2008) the efficacy has been buttressed. In addition, other CBT protocols that are currently considered to be possibly efficacious or experimental hold considerable promise for benefiting anxious youth. It is our contention that the future of CBT for child anxiety depends on the continued efforts to conduct sound, rigorous investigations of CBT protocols, including the moderators and mediators of treatment, that are informed by and sensitive to clinical practice issues.

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