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EVIDENCE BASE UPDATE

Evidence Base Update: 50 Years of Research on Treatment for Child and Adolescent Anxiety

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Anxiety disorders are the most common mental health disorder among children and adolescents. We examined 111 treatment outcome studies testing 204 treatment conditions for child and adolescent anxiety published between 1967 and mid-2013. Studies were selected for inclusion in this review using the PracticeWise Evidence-Based Services database. Using guidelines identified by this journal (Southam-Gerow & Prinstein, 2014), studies were included if they were conducted with children and/or adolescents (ages 1–19) with anxiety and/or avoidance problems. In addition to reviewing the strength of the evidence, the review also examined indicators of effectiveness, common practices across treatment families, and mediators and moderators of treatment outcome. Six treatments reached well-established status for child and adolescent anxiety, 8 were identified as probably efficacious, 2 were identified as possibly efficacious, 6 treatments were deemed experimental, and 8 treatments of questionable efficacy emerged. Findings from this review suggest substantial support for cognitive-behavioral therapy (CBT) as an effective and appropriate first-line treatment for youth with anxiety disorders. Several other treatment approaches emerged as probably efficacious that are not primarily CBT based, suggesting that there are alternative evidence-based treatments that practitioners can turn to for children and adolescents who do not respond well to CBT. The review concludes with a discussion of treatments that improve functioning in addition to reducing symptoms, common practices derived from evidence-based treatments, mediators and moderators of treatment outcomes, recommendations for best practice, and suggestions for future research.

Anxiety disorders represent the most common mental health disorder among both children (Cartwright-Hatton, McNicol, & Doubleday, 2006) and adolescents (Merikangas et al., 2010), with more than one third of community-based adolescents and nearly half of clinically referred youth meeting diagnostic criteria for an anxiety disorder before adulthood (Hammerness et al., 2008). Anxiety disorders are associated with significant impairments in functioning across domains (e.g., Ezpeleta, Keeler, Erkanli, Costello, & Angold, 2001), and more than 8% of adolescents will, during the course of development, experience an anxiety disorder associated with severe levels of impairment (Hammerness et al., 2008). Anxiety disorders are also associated with numerous negative mental health outcomes, including the development of subsequent anxiety disorders, mood disorders, substance misuse, and reduced educational achievement

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(e.g., Woodward & Fergusson, 2001). Taken together, the high prevalence of anxiety disorders among youth, their associated impairments in functioning, and their negative mental health sequelae strongly suggest the need for the implementation of effective interventions to address these problems.

However, being able to obtain and access the most relevant and current data available on the present state of empirically supported treatments for anxiety disorders is not necessarily an easily accomplished task (e.g., Chorpita & Daleiden, 2014). In addition to more traditional models of "leveling" treatments to denote their efficacy (e.g., Chambless & Hollon, 1998), other factors such as feasibility, generalizability, cost, and magnitude and range of the effects must be taken into consideration as well to give a more complete assessment of the suitability of any given treatment for application in practice settings (see Chorpita et al., 2002). Indeed, one review reported that after receiving an empirically supported treatment (cognitive-behavioral therapy [CBT]) for an anxiety disorder, only 56.5% of children were diagnosis free, compared with 34.8% of participants assigned to a waitlist control condition (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004). These findings reveal that reliance on the single outcome indicator of posttreatment diagnostic status might potentially underestimate the positive effect of this treatment for child and adolescent anxiety. Consistent with the recommendations of Hoagwood, Jensen, Petti, and Burns (1996) and others (e.g., Becker, Chorpita, & Daleiden, 2011) who advocate the examination of multiple indicators of treatment outcome, including those relevant to the youth and the systems in which they function, these findings speak to the need for further analysis of the treatment outcome literature for child and adolescent anxiety disorders to address questions relevant to the potential effectiveness of a given intervention for a particular youth with a particular problem (e.g., Chorpita et al., 2011).

Ollendick and King (1998) presented the first review of treatments for child and adolescent phobic and anxiety disorders that used guidelines set forth by the American Psychological Association (APA) Task Force on Promotion and Dissemination of Psychological Procedures, Division of Clinical Psychology, American Psychological Association (1995) to evaluate the efficacy of a given psychological intervention. As explained by Lonigan and colleagues (Lonigan, Elbert, & Johnson, 1998) in their introduction to the special issue examining the evidence for child and adolescent psychological treatments, the mandate of the APA task force was to "identify specific psychosocial interventions for specific problems" (p. 140). Given the state of the evidence base at the time of this initial review, the evidence reviewed by Ollendick and King referred primarily to specific psychological procedures: "systematic desensitization (both imaginal and in vivo), emotive imagery, modeling, reinforced practice, verbal self-instruction, modeling, reinforced practice, verbal self-instruction, cognitive-behavioral interventions, and integrated cognitive-behavioral plus family-based procedures" (p. 157). In the intervening decade between Ollendick and King's review and its subsequent update (Silverman, Pina, & Viswesvaran, 2008), the evidence base shifted from comprising examinations of specific therapeutic procedures to studies testing comprehensive treatment programs, influenced in part perhaps by the Division 12 Task Force requirement of treatment manuals for an intervention to be considered well-established or probably efficacious. In its initial compilation of treatments that had yielded empirical support, this Task Force decided to include the criterion of a treatment manual with the understanding that manuals were necessary for the provision and teaching of specific therapeutic interventions. The requirement of treatment manuals was not applied by the Division 53 Task Force in their construction of the initial criteria to evaluate child and adolescent psychological interventions (Lonigan et al., 1998); however, this criterion was imposed in the subsequent 2008 review. Accordingly, the focus in the Silverman et al. (2008) review shifted to that of "group design studies, most of which evaluated a combination of therapeutic strategies or a treatment package/program (e.g., Coping Cat; Kendall, 1994)" (p. 106). Indeed, the evidence presented in the 2008 review is primarily by treatment name (e.g., Social Effectiveness Training for Children for SOP; FRIENDS). The shift from identifying specific procedures to instead "naming" treatments appears to be at least in part related to changes in the criteria used to level these interventions. More specifically, when treatment manuals became part of the required criteria to attain well-supported or probably efficacious status, treatment packages or "name brand" treatments comprised the evidence examined in subsequent reviews.

In the update to the 1998 review, Silverman et al. (2008) examined 32 between-group design studies using a four-level system to classify treatments according to their degree of empirical support. Although no well-established treatments were identified, five treatments attained probably efficacious status, 16 treatments were found to be possibly efficacious, and three treatments were supported as experimental. A subsequent effect size meta-analysis (Silverman et al., 2008) revealed that for cognitive behavioral treatments, 95% of the studies examined reported that at least 46% (range = 46–79%) of participants demonstrated posttreatment diagnostic recovery (e.g., no longer met diagnostic treatment following treatment). The observed diagnostic recovery rates for individual and group CBT were similar (59 and 62%, respectively), and treatments in which parents were

involved, had diagnostic recovery rates similar to those in which parents were not involved (68% vs. 64%) across both individual (68%) and group (67%) formats. Finally, the mean treatment-related effect size (Cohen's *d*) for improvement as assessed by rating scales was 0.44 for CBT for anxiety symptoms and 0.41 for other symptoms; effect sizes were similar for individual and group treatments for anxiety (0.46 and 0.41, respectively) and for other symptoms (0.27 and 0.21, respectively).

Few studies included in the 2008 review included sufficient data to examine mediators and moderators of treatment outcome. However, in one study reported by Treadwell and Kendall (1996), changes in anxious self-talk were found to mediate symptom outcome as assessed by youth self-report measures. A subsequent study replicated this finding such that in a new sample, changes in anxious self-statements mediated treatment outcome, as assessed by youth-reported symptoms of anxiety (Kendall & Treadwell, 2007). Indeed, previous reviews of the child and adolescent anxiety literature in this journal (e.g., Kendall, Settipani, & Cummings, 2012) have recommended further examination of mediators of treatment outcome in an effort to better understand the mechanisms of change underlying empirically supported treatments while enhancing our ability to tailor these interventions to match specific presenting features of the individual client (i.e., ''personalization''). However, rather than examining only internal youth variables such as cognitions or self-statements, it is also recommended that efforts to augment treatment personalization include examinations of therapy process variables such as therapist characteristics and behaviors, collaboration between the therapist and the youth, and the degree of youth involvement in sessions (Kendall et al., 2012). With regard to moderators of treatment outcome, Barrett, Dadds, and Rapee (1996) observed age and sex to be significant moderators of treatment outcome such that younger children and girls demonstrated a significantly better treatment response to individual CBT with family anxiety management than to individual CBT alone.

Subsequent to the Silverman et al. (2008) review, Chorpita et al. (2011) updated their 2002 review of the child and adolescent evidence-based treatment literature. The anxiety component of the 2011 review extended the findings of Silverman et al. (2008) in that Chorpita et al. (a) placed specific treatment protocols into broader categories (*treatment families*), thereby allowing for the demonstration of the efficacy of certain therapeutic approaches with minor variations and moving away from the ''naming'' of specific treatment protocols or manuals; (b) applied a framework within which to document various aspects related to treatment effectiveness (i.e., feasibility, generalizability, and effect size); and (c) yielded a larger number of supported treatments given the inclusion of two new levels of support (*moderate support* and *minimal support*), which allowed for the identification of promising treatments that might not yet have yielded sufficient evidence of strong empirical support. This 2011 review identified 17 treatment families for anxiety and avoidance: five at Level 1 (*best support* or *well-established*), six at Level 2 (*good support* or *probably efficacious*), two at Level 3 (*moderate support*), and four at Level 4 (*minimal support*). Observed mean effect sizes for each treatment family, indicating standardized pre–post differences in outcome, ranged from 0.45 to 1.06 for Level 1 treatment families, from 0.27 to 1.24 for Level 2 treatment families, and from 0.55 to 0.77 for Level 3 treatment families.

Whereas Silverman et al.'s (2008) review identified 32 clinical trials conducted between 1994 and 2006, this current update incorporates findings from a larger set of studies, including 108 published reports describing findings from 111 clinical trials testing 204 different treatment conditions. Nearly 80% of these trials were published between 1967 and 2006 (23 papers, 23 studies, and 41 treatment conditions), and the remainder (24 papers, 24 studies, and 42 treatment conditions) was published from 2007 to 2011. Aside from the larger number of studies included in the analyses, this evidence base update extends previous reviews by addressing the recommendations of Silverman et al. (2008) in the following ways. The 2008 review recommended identifying the relative efficacy of specific therapeutic elements through the use of dismantling studies and analyses of potential mediators and moderators of treatment outcome. Although a review of full treatments, as presented here, cannot establish the efficacy of specific therapeutic components (Chorpita, Becker, & Daleiden, 2007), this update will (a) evaluate mediators and moderators of treatment outcome, and (b) identify those specific treatment components or techniques that are most often present in protocols that have demonstrated empirical support. More specifically, in addition to presenting findings at the level of treatment families (consistent with the move away from discussing ''brand-name'' therapies; e.g., Chorpita et al., 2002, 2011; Rogers & Vismara, 2008), this report also presents frequency profiles of the practice elements associated with the most efficacious treatments, as have previous reviews of the outcome literature for youth internalizing and externalizing problems (e.g., Borntrager, Chorpita, Higa-McMillan, Daleiden, & Starace, 2013; Brookman-Frazee, Haine, Baker-Ericzen, Zoffness, & Garland, 2010). Whereas the construct of *treatment family* serves to aggregate similar treatment protocols that employ common therapeutic elements (e.g., individual protocols that each involve self-monitoring,

developing coping statements, and associated behavioral exercises would be grouped together as one treatment family), the concept of *practice element* is intended to assist in identifying the specific ''clinical ingredients'' (e.g., Cognitive, Exposure, Relaxation; Chorpita, Daleiden, & PracticeWise, 2009, p. 7) of which each treatment protocol is comprised. Using practice elements, rather than treatment protocols, as the level of analysis allows for the construction of *practice element profiles* or frequency graphs, which indicate the proportion of supported treatment protocols that include identified practice elements for specific target problems (Chorpita et al., 2009). The use of practice element profiles is also intended to make reviews such as this more accessible to practitioners (consistent with the goals of the evidence base updates of this journal; Southam-Gerow & Prinstein, 2014) as these profiles indicate which specific therapeutic practices most frequently occur within the best supported treatment protocols.

This update also speaks to the durability of treatment families by (a) providing estimates of the percentages of conditions within treatment families that included a follow-up assessment to assess the longevity of treatment effects, and (b) specifying the maximum successful follow-up period for each treatment family.

Silverman et al. (2008) further recommended improvements in instrumentation to address the question of metric equivalence, or whether similar changes across groups have the same meaning. One way to address this question is to examine measures of functional impairment across studies in order to evaluate whether a treatment demonstrating statistical significance is also responsible for clinically significant change in the individual's daily life. Several authors have examined clinically significant change specifically (e.g., Silverman, Kurtines, Jaccard, & Pina, 2009), whereas others have examined factors in psychotherapy outcome research that attempt to go beyond typical measures of efficacy and effectiveness (e.g., Chorpita & Daleiden, 2009; Kendall et al., 2009; La Greca, Silverman, & Lochman, 2009a; see also La Greca, Silverman, & Lochman, 2009b). More recently, Becker et al. (2011) proposed that exclusive reliance on symptom reduction as a means to identify and level evidence-based practices might be limiting in that such reliance could provide either an overestimate of treatment effects (e.g., when improvements are not observed in other domains) or an underestimate (e.g., when functional gains are observed in the absence of symptom reduction). In the current context of increasing numbers of evidence-based treatments, Becker et al. suggested that our field needs to revise the criteria used not only to assign strength of evidence levels to these treatments but also to guide the selection of the most appropriate treatments for clients, caregivers, and clinicians. In their review, Becker et al. (2011) identified 23 treatment families for anxiety and avoidance, 17 of which (73.9%) demonstrated empirical support of at least a minimal level (i.e., Level 4 or higher, according to the criteria employed by Chorpita et al., 2011). Although only four (17.4%) of these 23 treatment families were examined in studies that also employed measures of functioning, all four treatment families demonstrated empirical support when using functioning as the outcome criterion. However, the vast majority of treatment families identified for anxiety and avoidance did not measure functioning and thus were classified as Level 5 treatments (showing no support), not because of null findings on measures of functioning but rather because of an absence of evidence to inform the issue, given that functioning was not measured. Becker et al. (2011) concluded that outcomes on measures of functioning can provide a useful criterion by which to identify and assign strength of evidence levels to evidence-based treatments because they provide an additional dimension across which to evaluate treatment effectiveness. Accordingly, our current update identifies those studies that included measures of functional impairment and examines outcomes based on those measures.

Finally, in their 2008 update, Silverman and colleagues recommended taking into consideration the developmental and ethnic groups in which specific treatment protocols have been studied. Addressing these questions speaks to the generalizability of these treatments and assists in identification of the most supported treatments for specific individual clients.

METHOD

Study Identification and Selection Criteria

Studies for this review were retrieved from the PracticeWise Evidence-Based Services (PWEBS) Database, under a research agreement with PracticeWise, LLC. Coded studies were retrieved in the fall 2013 release, which included studies published until mid-2013. Studies of psychosocial and combined psychosocial-psychopharmacological treatments included in PWEBS were published between 1967 and 2011 (no studies were published between 2012 and mid-2013 that met our criteria). Studies coded in PWEBS are continuously identified through computerized searches using electronic databases (e.g., PsycINFO, Medline) by the standing team of trained professional coders (without standardized search terms) and through nominations by national scholars in treatment outcome research, members of Hawaii's Evidence Based Services Committee, members of the Minnesota Department of

Human Services, and others in the professional community (cf. Chorpita et al., 2011). All studies nominated via e-mail by any of these individuals were then reviewed by the database manager in order to confirm inclusion criteria eligibility. Consistent with previous reviews (Chorpita et al., 2011) and with the charge of this evidence-based update (Southam-Gerow & Prinstein, 2014), studies were included if they (a) tested an active psychosocial or combined treatment relative to a control group, (b) used random assignment, (c) were conducted with children and/or adolescents (ages 1–19) with anxiety and/or avoidance problems (we excluded studies primarily targeting youth with obsessive-compulsive disorder (OCD) or posttraumatic stress disorder (PTSD) as these have been or will be addressed in separate reviews consistent with the separation of these conditions in the *Diagnostic and Statistical Manual of Mental Disorders* [5th ed.; American Psychiatric Association, 2013]), and (d) reported anxiety-targeted outcome measures at posttreatment. Using these criteria, from 707 screened studies (1,778 protocols), 122 papers examined any anxiety. Fourteen of these studies were removed from the review, as they focused primarily on treatment for OCD or PTSD (PWEBS includes treatment for OCD under a general Anxiety Problem area and PTSD under Traumatic Stress). Thus, 108 papers (111 studies) were coded and included in this review.

Coding and Reliability

As previously noted, the PracticeWise Clinical Coding System (PracticeWise, 2012), which summarizes variables relating to studies, study conditions, treatment protocols, and practice elements, was used to identify and code the literature for this review. To ensure reliable coding, studies were reviewed by two professional PracticeWise coders who underwent extensive training using a detailed coding manual. When the two raters disagreed, the discrepancy was flagged and a third final judge resolved the discrepancy through a third coding of the relevant study or protocol code. It should be noted that single publications could contain multiple studies (e.g., "Study 1," "Study 2"); on the other hand, single studies could sometimes be summarized across multiple publications. Reliability of this coding procedure on this same article population has been reported elsewhere with good to excellent reliability coefficients, with kappas ranging from 0.84 to 1.0 and r ranging from 0.88 to 1.0 (Chorpita & Daleiden, 2009; Chorpita et al., 2011).

Identifying Treatment Families

Treatment families were defined as interventions sharing a majority of therapeutic elements with similar clinical strategies and theoretical foundations, consistent with previous reviews (Chorpita et al., 2011). We aggregated treatments when they shared a common set of principles and procedures, and we separated treatment families only when there were rather unique practices or principles that caused one treatment to stand out from a group in which it might otherwise fit. In other words, our coding of treatment families tended to maintain separation of approaches with largely different theoretical underpinnings where each treatment family is considered mutually exclusive (although there may be some overlap in specific techniques used in different treatment families). For instance, CBT and Exposure are classified as two different treatment families. Some treatments coded under CBT include exposure-based techniques, but they also include other cognitive management techniques that separate them from interventions that exclusively or almost exclusively focus on exposure-based techniques. These latter interventions, which are primarily exposure based and do not include other anxiety management techniques, would be considered part of the exposure treatment family. Examples of treatment families coded in the literature that may be less well known include Peer Pairing (social recreational groups that promote self-development skills and pro-social skills through games and activities), Stress Inoculation (blend of progressive muscle relaxation, cognitive restructuring, and assertiveness training), and Group Therapy (therapy delivered in a group format supervised by a therapist which was not guided by a specific theoretical foundation).

Leveling Strength of Evidence

A five-level system to "grade" treatments was implemented. This leveling system is based on standards originally suggested by APA Division 12 and has been updated to include three additional levels as suggested in recent years (e.g., Chorpita et al., 2011; Nathan & Gorman, 2002; Silverman & Hinshaw, 2008). The criteria used to identify the strength of evidence was the same used by PracticeWise, LLC, which has been used for a number of years as a standard way of leveling the evidence (Chorpita et al., 2002, 2011; see Table 1). Although this leveling system is very similar to the leveling system used by Southam-Gerow and Prinstein (2014) in this journal, there are a few minor differences. For instance, in PWEBS, studies could also be included in Level 2 without treatment manuals or clear specification of condition if there were at least two experiments showing treatment was statistically significantly superior to waitlist or no-treatment control. In addition, Levels 3 and 4 are more stringent in that random assignment to conditions was required (i.e., open trials and single-subject designs are not included); however, the requirement of treatment manuals does not apply to these levels. Given the breadth

TABLE 1
Strength of Evidence Criteria

Level 1: Best Support/Well-Established Treatments
1.1. At least two randomized trials demonstrating efficacy:
  a. Superior to pill placebo, psychological placebo, or another treatment
  b. Equivalent to all other conditions representing at least one Level 1 or Level 2 treatment in a study with adequate statistical power (at least n = 30) and showed significant pre-post change in index condition as well as condition(s) being tied. Note: ties of treatments that previously qualified only through ties are ineligible.
1.2. Must include treatment manuals.
1.3. Effects must be demonstrated by at least two different investigator teams.

Level 2: Good Support/Probably Efficacious
2.1. Two experiments showing treatment is statistically significantly superior to waitlist or no-treatment control group. In this case manuals, specification of sample and independent investigators not required.

OR

2.2. One between-group design with clear specification of condition, use of manuals and demonstrating efficacy:
  a. Superior to pill placebo, psychological placebo, or another treatment
  b. Equivalent to all other conditions representing at least one Level 1 or Level 2 treatment in a study with adequate statistical power (at least n = 30) and showed significant pre-post change in index condition as well as condition(s) being tied. Note: ties of treatments that previously qualified only through ties are ineligible.

Level 3: Moderate Support/Possibly Efficacious
3.1. One between-group design experiment with clear specification of group and treatment approach and demonstrating efficacy:
  a. Superior to pill placebo, psychological placebo, or another treatment
  b. Equivalent to all other conditions representing at least one Level 1 or Level 2 treatment in a study with adequate statistical power (at least n = 30) and showed significant pre-post change in index condition as well as condition(s) being tied. Note: ties of treatments that previously qualified only through ties are ineligible.

Level 4: Minimal Support/Experimental Treatments
4.1. One experiment showing the treatment is (statistically significantly) superior to a waiting list or no-treatment control group. Manuals, specification of sample, and independent investigators are not required.

Level 5: No Support/Treatments of Questionable Efficacy
5.1. Treatment tested in at least one study but failed to meet criteria for Levels 1 through 4.

of evidence-based treatments available, in order to provide readers with additional ways of assessing these treatments, the five levels were examined using two criteria: (a) reduction in symptoms based on the primary outcome measure (see Tables 2 and 3) and (b) improvement in functional impairment (see Table 4; see Becker et al., 2011, for definition). The latter serves as a more conservative assessment of the available treatments. One measure of anxiety and one measure of functioning were selected for each of these domains for each study. Unless there was only one measure within a domain, the primary outcome measure was selected based on whether there was a measure explicitly identified as the main outcome of the study, but otherwise if multiple ''good'' measures were reported (e.g., all commonly used), then the preferred informant (youth report of internalizing problems and level of specificity (i.e., narrow vs. broad constructs) would be considered in picking one measure.

Indicators of Effectiveness

As the research base grows, it is becoming increasingly important to offer additional sources of information about evidence-based treatments that can assist practitioners and policymakers in evaluating the effectiveness (in addition to the efficacy) of treatments for child and adolescent anxiety. Thus, similar to Chorpita et al. (2002, 2011), this review includes indicators of feasibility, generalizability, and expected benefits. For example, the number of study conditions in which a protocol from a treatment family performed better than one or more other study conditions or tied with an evidence-based treatment in a randomized trial on the primary outcome measure in the target symptom domain was included (''Wins/Ties''),[1] which can be used as an index of the reliability of the finding in the literature (i.e., with higher numbers leading to generally greater confidence about the difference detected). Related to this, the average within-group effect size across treatments within a treatment family was also included, where each group effect size is defined as the difference between pre- and posttreatment group means divided by the pooled standard deviation (standard deviations of the pretreatment mean and the posttreatment mean) on the primary outcome measure (Dunlop, Cortina, Vaslow, & Burke, 1996). In addition, for treatment families with more than one study, we included their averaged weighted effect size to account for sample size differences across studies. The most recent year a winning protocol from a

[1]The number of Wins/Ties does not equal the number of studies included in analyses for that treatment family.

particular treatment family was published was identified to provide an indicator of how current the supportive literature is on the intervention type. To provide another assessment of treatment effectiveness, a summary of durability of treatment families by providing percentages of conditions within treatment families that included a follow-up assessment in the original randomized clinical trial (RCT) article is included. The longest successful follow-up period for each individual article was documented, and from that the maximum follow-up period within each treatment family was added to this review. Given that there may be subsequent articles documenting longer follow-up results, our durability analyses are best interpreted as a ''minimum'' length of documented follow-up for each treatment family.

Two important questions for implementation of evidence-based treatments in community settings are to whom and in what context do our best treatments generalize? As such, clinical utility indicators across the five levels of treatments are presented: gender, age, ethnicity, frequency and duration of contact, format of treatment, and clinical setting. Another important indicator of effectiveness is treatment acceptability. As such, an estimate of treatment compliance, which indicates the average percentage of youth who completed the treatment type is reported. Therapist highest education level was included to identify the minimum level of training needed to administer these treatments. Similarly, trainability was also included to indicate the extent to which an intervention can be trained to others (i.e., high = manual available and treatment successfully used by non-doctoral-level practitioners; moderate = manual available or treatment successfully used by non-doctoral-level practitioners; low = no manual available and treatment successfully used by doctoral-level practitioners only). For more details on how indicators were defined and coded, please see Chorpita et al. (2011).

Practice Element Profile

To make this review as accessible to practitioners as possible, a frequency graph indicating the proportion of supported treatment protocols that included identified practice elements for the best supported (Level 1) treatments is also presented. Using the PracticeWise coding system, 73 practices were coded for presence or absence in all treatment protocols. A practice element is defined as

> a discrete clinical technique or strategy (e.g., ''time out,'' ''relaxation'') used as part of a larger intervention plan (e.g., a manualized treatment program for youth depression), based on the assumptions that (a) practice elements can be explicitly defined (e.g., using a definition or coding manual), (b) their presence within various interventions can be reliably coded, and (c) different treatments may share practice elements in common. (Chorpita, Daleiden, & Weisz, 2005, p. 11)

See Chorpita et al. (2005) and Chorpita and Daleiden (2009) for an extensive definition and for the development of the initial pool of codes.

Review of Mediators and Moderators

Finally, because mediators and moderators of treatment outcome are not regularly coded in the PracticeWise Evidence Based Services Database, a separate review of studies identified through computerized searches using electronic databases (PsycINFO, Medline) was conducted, focusing on studies published since the review by Silverman et al. (2008) until mid-2014. General search terms included ''mediator,'' ''moderator,'' ''interaction,'' ''child,'' ''adolescent,'' ''youth,'' ''anxiety,'' and ''treatment.'' Reference lists and articles that cited studies in the initial search were also examined, resulting in 161 papers. After screening for the criteria just noted and removing studies that examined other areas of psychopathology (e.g., OCD, PTSD, depression, attention deficit/hyperactivity disorder), 21 papers were included in the review.

RESULTS

Status of Evidence-Based Treatments

In this review of the child and adolescent anxiety treatment outcome literature, six well-established treatments (Level 1), eight probably efficacious treatments (Level 2), two possibly efficacious treatments (Level 3), six experimental treatments (Level 4), and eight treatments of questionable efficacy (Level 5) were identified (see Table 2). Consistent with previous reviews, the majority of the treatments with strong support (i.e., Level 1 or Level 2) for child and adolescent anxiety included approaches consistent with CBT, including exposure-based approaches. Although many CBT treatments had exposure practices, treatments in the exposure treatment family—those explicitly without cognitive components—also met Level 1 criteria. CBT and exposure-based treatments had large effect sizes, durability of effects (lasting for a minimum of 1 year posttreatment), and some of the most up-to-date empirical support. Furthermore, these treatments showed the greatest amount of diversity among participant characteristics, treatment format, treatment setting, and therapist background (see Table 3). In particular, these treatments have been (a) evaluated with very diverse youth characteristics (e.g., ages 3–18; across 10 different ethnicities); (b) tested with therapists with

TABLE 2
Evidence-Based Treatments for Anxiety Leveling on Symptoms

Treatment Family	*Wins/Ties*[a]	*Year*[b]	*Effect Size*[c,d]	*% With Follow-Up Measure*	*Minimum Length Successful Follow-Up*
Level 1: Best Support/Well-Established Treatments					
CBT	46	2011	1.19 (0.94)	49%	1 year
Exposure	32	2009	1.05 (1.05)	26%	1 year
Modeling	9	2001	1.42 (0.78)	31%	1 month
CBT With Parents	7	2010	1.25 (0.92)	60%	1 year
Education	3	2009	1.26 (1.13)	50%	2 months
CBT Plus Medication	1	2008	2.37	0%	—
Level 2: Good Support/Probably Efficacious Treatments					
Family Psychoeducation	2	2009	0.40	100%	1 year
Relaxation	2	1970	—	0%	—
Assertiveness Training	1	1987	—	0%	—
Attention Control	1	2010	0.72	50%	1 year
CBT for Child and Parent	1	2003	—	100%	1 year
Cultural Storytelling	1	1994	—	0%	—
Hypnosis	1	1994	2.29	100%	6 months
Stress Inoculation	1	1994	1.10	100%	1 month
Level 3: Moderate Support/Possibly Efficacious Treatments					
Contingency Management	1	1970	—	0%	—
Group Therapy	1	1970	—	0%	—
Level 4: Minimal Support/Experimental Treatments					
Biofeedback	1	1996	—	0%	—
CBT with Parents Only	1	2011	0.68 (0.98)	33%	1 year
Play Therapy	1	1982	—	0%	—
Psychodynamic	1	1972	1.53	100%	2 months
Rational Emotive Therapy	1	1984	1.38	67%	1 month
Social Skills	1	2004	0.14	0%	—
Level 5: No Support/Treatments of Questionable Efficacy					
Assessment/Monitoring	0	2010	0.56	0%	—
Attachment Therapy	0	1991	—	0%	—
Client Centered Therapy	0	1971	0.46	0%	—
Eye Movement Desensitization and Reprocessing	0	1998	0.67	0%	—
Peer Pairing	0	2011	0.53	100%	6 months
Psychoeducation	0	2009	0.30	100%	6 months
Relationship Counseling	0	1984	—	100%	6 months
Teacher Psychotherapy	0	1982	0.45	0%	—

Note: A dash indicates that information could not be determined from the published reports. CBT = cognitive behavioral therapy.

[a]Wins/Ties does not equal the number of studies included in analyses for that treatment family.

[b]Year of the most recently published randomized clinical trials in treatment family.

[c]Within-group effect size for each treatment group was calculated from the difference in post-mean from pre-mean, divided by their pooled variance.

[d]Average weighted effect sizes (from each study's effect size multiplied by the inverse of its standard error) are included parenthetically for those treatment families in which more than one study was represented.

varying levels of training ranging from pre-bachelor's-level therapists to the use of self-administered protocols; (c) examined in diverse formats ranging from individual and group to parent/teacher group to phone/Internet/e-mail; and (d) evaluated in a number of different settings including outpatient clinics, daycare, home-based treatment, hospital-based treatment, online, and in schools.

Other treatment families consistent with CBT that met Level 1 criteria included modeling (therapist, peers, or other confederates demonstrating a nonfearful response to promote imitation), CBT with parents (including techniques targeted at assisting caregivers with anxious youth such as psychoeducation for caregivers, individual therapy for caregivers, caregiver coping, and parent training techniques), and CBT plus medication. There were also three trials that demonstrated education as a treatment family efficacious in treating test anxiety and school phobia where the interventions focused on assistance with specific academic problems such as homework or study skills. Treatments with good support (Level 2 criteria) that are consistent with CBT included family psychoeducation, relaxation, assertiveness training, and stress inoculation. Although these individual treatments are often combined in larger CBT treatment protocols, these treatment families do

TABLE 3
To Whom and in What Context? Evidence-Based Treatments for Anxiety Leveling on Symptoms

Treatment Family	*Compliance*[a]	*Gender*	*Age*	*Ethnicity*	*Therapist*	*Train*	*Frequency*	*Duration*	*Format*	*Setting*
Level 1: Best Support/Well-Established Treatments										
CBT	95%	Both	3–18	Aboriginal (Australia), American Indian or Alaska Native, Asian, African American, Caucasian, Dutch, Hindu, Hispanic or Latino/a, Indonesian, Multiethnic, Other	Pre-BA, BA, MA Student, MA, MSW, PhD Student, PhD, MD, Self, Other	High	Daily to Monthly	1 day to 1 year	Client Group, Client Individual, Self Administered, Email, Family, Internet, Multi-Family, Parent and Child, Parent Group, Parent Individual, Parent Self Administered, Teacher Group, Telephone Call	Clinic, Community Field, Day Care, Home, Online, School
Exposure	97%	Both	3–19	African-American, Caucasian, Hispanic or Latino/a, Multiethnic, Other	Pre-BA, BA, MA Student, MA, PhD Student, PhD, Other	High	Daily to Weekly	1 day to 14 weeks	Client Group, Client Individual, Parent and Child, Parent Group, Parent Individual	Clinic, Community Field, Day Care, Hospital, School
Modeling	88%	Both	2–16	African-American, Caucasian	Pre-BA, MA Student, PhD Student, PhD, Teacher, Other	High	Daily to Weekly	1 day to 6 months	Client Group, Client Individual, Computer Administered	Community Field, Dental Clinic, School
CBT With Parents	87%	Both	4–17	American Indian or Alaska Native, Asian, African American, Caucasian, Hispanic or Latino/a, Multiethnic, Pacific Islander, Other	MA, PhD Student, PhD, MD, Other	High	Weekly to Biweekly	9 weeks to 6 months	Client Group, Client Individual, Computer Administered, Family, Multi-Family, Parent and Child, Parent Group, Parent Individual	Clinic, School
Education	100%	Both	7–16	African-American, Caucasian, Hispanic or Latino/a	Pre-BA, MA, Other	High	Daily to Weekly	1 day to 12 weeks	Client Group, Client Individual	Clinic, School
CBT plus Medication	100%	Both	6–14	American Indian or Alaska Native, Asian, African American, Caucasian, Hispanic or Latino/a, Pacific Islander, Other	MD, Other	Moderate	—	12 weeks	Client Individual, Parent and Child, Parent Individual	—
Level 2: Good Support/Probably Efficacious Treatments										
Family Psycho-education	89%	Both	6–14	Asian, Caucasian, Other	PhD Student, PhD	High	Weekly	10 weeks to 16 weeks	Client Group, Client Individual, Multi-Family, Parent and Child, Parent Group, Parent Individual	Clinic

(*Continued*)

TABLE 3
Continued

Treatment Family	*Compliance*[a]	*Gender*	*Age*	*Ethnicity*	*Therapist*	*Train*	*Frequency*	*Duration*	*Format*	*Setting*
Relaxation	85%	Both	8–18	American Indian or Alaska Native, Asian, Caucasian, Hispanic or Latino/a, Multiethnic, Pacific Islander	BA, Other	High	Daily to Biweekly	1 to 2 months	Client Group	School
Assertiveness Training	79%	Both	14–15	—	—	Moderate	Semiweekly	2 weeks	Client Group	School
Attention Control	98%	Both	3–13	Asian, African American, Caucasian, Hispanic or Latino/a, Other	Pre-BA, MA, PhD Student, PhD, Teacher, Other	High	Daily to Weekly	2 days to 12 weeks	Client Group, Client Individual, Computer Administered, Parent and Child, Parent Group, Parent Individual	Day Care, School
CBT for Child and Parent	62%	Both	7–18	Caucasian	PhD Student, PhD	High	Weekly	12–14 weeks	Client Group, Client Individual Parent Group, Parent Individual	Clinic
Cultural Storytelling	100%	—	9–13	Hispanic or Latino/a	PhD Student	High	Weekly	8 weeks	Client Group	School
Hypnosis	100%	Both	12–15	—	—	Moderate	Weekly	2 weeks	Client Group	School
Stress Inoculation	100%	Both	14–15	Caucasian	MA, PhD Student	High	Weekly	8 weeks	Client Group	School
Level 3: Moderate Support/Possibly Efficacious Treatments										
Contingency Management	100%	Male	7–9	Caucasian	PhD Student, MD	Moderate	Weekly	20 weeks	Client Group	Clinic
Group Therapy	100%	Male	7–9	Caucasian	Other	—	Weekly	20 weeks	Client Group	Clinic
Level 4: Minimal Support/Experimental Treatments										
Biofeedback	100%	—	12–14	—	Other	—	Semiweekly	12 weeks	—	School
CBT with Parents Only	95%	Both	3–12	—	MA, PhD Student, PhD, MD, Other	High	Weekly to Monthly	10–12 weeks	Parent Group, Telephone Call	—
Play Therapy	100%	Both	2–11	—	Teacher	Moderate	Semiweekly to Weekly	8 days to 17 weeks	Client Individual	School
Psychodynamic	100%	Both	6–15	African-American, Caucasian	PhD	Low	Semiweekly	8 weeks	Client Individual	Clinic
Rational Emotive Therapy	98%	Both	10–16	Caucasian	MA, PhD Student	High	Semiweekly to Weekly	3–5 weeks	Client Group	School

Social Skills	100%	—	8–9	Asian, African-American, Caucasian, Hispanic or Latino/a, Multiethnic	Pre-BA, Other	High	Weekly	8 weeks	Client Group	School
Level 5: No Support/Treatments of Questionable Efficacy										
Assessment/Monitoring	100%	Both	14–17	Caucasian	—	—	Biweekly	8 weeks	Client Individual	—
Attachment Therapy	100%	Both	1	Hispanic or Latino/a	MA, MSW	Moderate	Weekly	1 year	Client Group	Home
Client Centered Therapy	100%	Male	15–17	—	Teacher	High	—	—	Client Group	—
Eye Movement Desensitization and Reprocessing	100%	Female	9–17	Caucasian	Other	—	Daily	1 day	Parent and Child	Clinic
Peer Pairing	85%	Both	8–13	Asian	—	—	Weekly	16 weeks	—	—
Psychoeducation	83%	Both	13–17	African American, Caucasian, Hispanic or Latino/a,	PhD Student	High	Weekly	12 weeks	Client Group	Clinic
Relationship Counseling	100%	—	12–16	—	PhD Student	Moderate	Semiweekly	3 weeks	—	—
Teacher Psychotherapy	100%	—	9–12	—	Teacher	Moderate	—	—	Client Individual	School

Note. A dash indicates that information could not be determined from the published reports. CBT = cognitive behavioral therapy; "Train" = Trainability (High = manual available and treatment successfully used by non-doctoral-level practitioners; Moderate = manual available or treatment successfully used by non-doctoral-level practitioners; Low = no manual available and treatment successfully used by doctoral level practitioners only).

[a]Compliance is defined as the average percentage of children who did not drop out of the group (or estimated from the study when not reported by group) (posttreatment *n*)/(pretreatment *n*).

not include exposure components. These Level 1 and Level 2 treatments that did not specifically include exposure-based approaches tended to have smaller effect sizes, shorter tests of durability of effects (e.g., modeling was tested 1 month after treatment), more dated empirical support (e.g., assertiveness training was last examined in 1987), or showed less diversity among participant characteristics, treatment format, treatment setting, and therapist background (see Tables 2 and 3).

There were three treatments identified as Level 2 (probably efficacious) that were not primarily defined as cognitive-behavioral in approach (attention only, cultural storytelling, and hypnosis). In an RCT comparing school-based group CBT to an active control group, the attention-only control group was a supervised, structured after-school activity group where children participated in enjoyable group activities that did not explicitly cover feelings content (Manassis et al., 2010). In this study, children were not clinically referred. Children were screened through their school and were included in the RCT if they had a *T* score of 60 or greater on a self-report measure of anxiety. Given the relatively lower baseline anxiety scores (*M T* score = 60.42 CBT group and 62.10 attention-only group) and the fact that fewer than half of the participants met criteria for an anxiety disorder at pretreatment, the authors attributed the moderate treatment effect size (for both CBT and the attention-only groups) to a reduction in the potential room for improvement, relative to other RCTs that use nonintervention controls and/or inclusion of children who meet diagnostic criteria for an anxiety disorder.

Cultural storytelling or Cuento Therapy was examined by Costantino and colleagues (Costantino, Malgady, & Rogler, 1994). Hispanic inner-city youth ages 9–13 with subclinical anxiety, depression, and/or conduct problems (none met diagnostic criteria) were randomized to a cultural storytelling group or to an attention-control group. Youth in the cultural storytelling group were presented with a pictorial stimulus depicting Hispanic cultural elements and characters interacting in urban, familial, and school settings (Tell-Me-A-Story; Costantino, 1988). Youth came up with a composite story to go along with the TEMAS picture, discussed the story, and related this to their own personal experiences. Therapists reinforced adaptive responses, whereas maladaptive responses were discussed and alternative resolutions were encouraged. Youth were then videotaped while they dramatized the composite story, and this videotape was played back with the therapist reinforcing desired behavior. Youth randomized to the cultural storytelling group demonstrated significantly less anxiety at posttest relative to the control group who watched films geared toward children but without specific therapeutic content.

The third treatment that met Level 2 criteria that is not primarily categorized as cognitive-behavioral in approach was hypnosis. In an RCT examining a self-hypnosis procedure relative to a control condition (Stanton, 1994), high-test anxious adolescents ages 12–15 were taught a five-step procedure of self-hypnosis prior to taking a test. In addition to self-hypnosis, our coding of this treatment also revealed relaxation, guided imagery, and exposure. Although the latter practice element was not specifically labeled as such in the Stanton (1994) article, practice element codes are intended to be assigned independent of treatment family or orientation so as long as there is evidence of rehearsal of a feared situation, this element is coded as exposure. The effect size for this treatment was very large, and given the relatively short duration (2 weeks), this treatment may be worthwhile to pursue for youth with test anxiety.

Two treatment approaches attained Level 3 (possibly efficacious) status. These treatments were examined in the same RCT in 1970 and represent early forms of CBT: Children in the contingency management group received reinforcers from the therapist for engaging in social approach behaviors, and children in the group therapy condition played together without a therapist present (Clement, Fazzone, & Goldstein, 1970).

Treatments for Child and Adolescent Anxiety That Improve Functioning

With the significant growth in the number of empirically supported treatments available for youth anxiety, it is becoming increasingly important to provide multiple ways of examining the best-tested treatments. The standard approach has been to determine treatment efficacy based on symptom reduction. Another approach is to examine how well treatments address functional impairment. Applying this criterion eliminated more than 80% of the treatment families that met Level 4 criteria or higher in symptom reduction. With these more demanding standards for evidence, CBT was the only treatment family that met criteria for Level 1, and only CBT with Parents, CBT with Medication, and Exposure met criteria for Level 2 (see Table 4). On the positive side, these treatments have demonstrated large effect sizes on measures of functioning and CBT and CBT with Parents demonstrated improvements in functional impairment up to 1 year posttreatment.

Common Practices Derived From Evidence-Based Treatments

To provide another perspective on Well-Established Treatments for youth anxiety (Level 1), the frequency with which practice elements were coded as present in 165 study conditions was examined (see Figure 1).

TABLE 4
Evidence-Based Treatments for Anxiety Leveling on Functioning

Treatment Family	*Wins/Ties*[a]	*Effect Size*[b,c]	*% With Follow-Up Measure*	*Longest Successful Follow-Up*
Level 1: Best Support/Well-Established Treatments				
CBT	9	1.78 (1.62)	53%	1 year
Level 2: Good Support/Probably Efficacious Treatments				
CBT With Parents	3	1.99	60%	1 year
CBT With Medication	1	2.04	0%	—
Exposure	1	0.96 (1.01)	0%	—
Level 3: Moderate Support/Possibly Efficacious Treatments				
None				
Level 4: Minimal Support/Experimental Treatments				
None				
Level 5: No Support/Treatments of Questionable Efficacy				
Attention Control	0	0.27	0%	—

Note: Dashes indicate that information could not be determined from the published reports.

[a]Wins/Ties does not equal the number of studies included in analyses for that treatment family.

[b]Within-group effect size for each treatment group was calculated from the difference in postmean from premean, divided by their pooled variance.

[c]Average weighted effect sizes (from each study's effect size multiplied by the inverse of its standard error) are included parenthetically for those treatment families in which more than one study was represented.

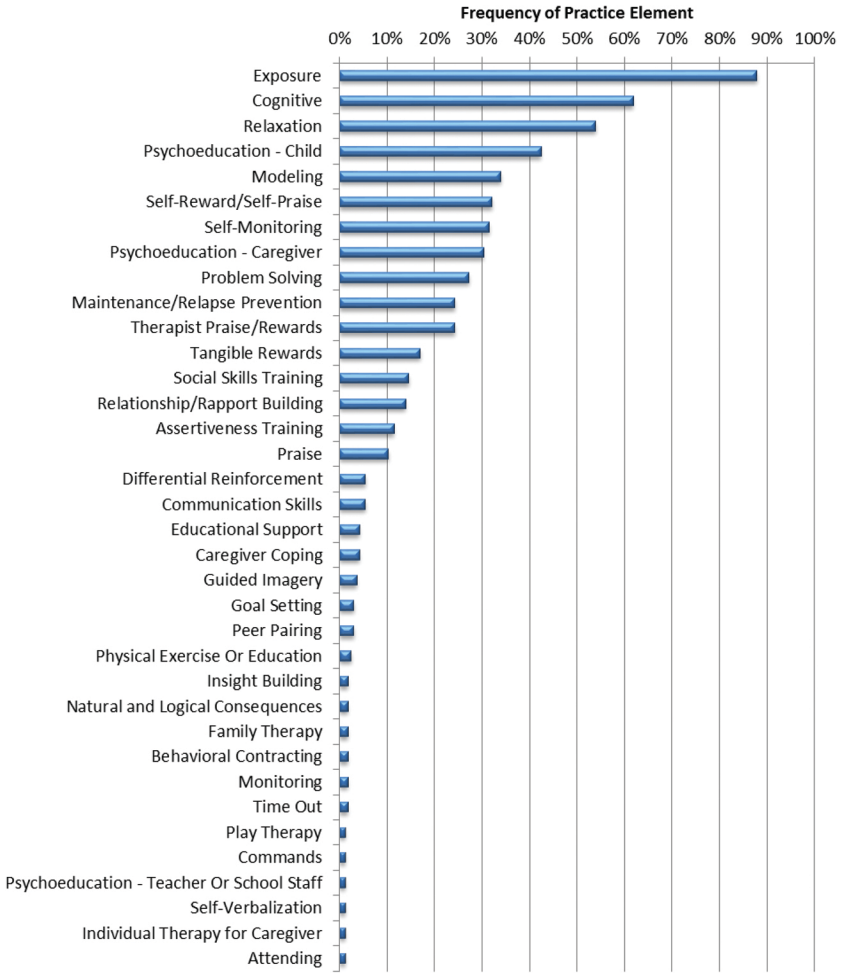

FIGURE 1 Practices derived from Level 1 evidence-based treatments for anxiety ($N = 165$ study conditions).

Exposure was the most commonly occurring practice derived from Level 1 treatments and was employed in 145 of 165 study conditions (87.9%). Cognitive techniques were the second most commonly occurring practice (102/165 = 61.8%), Relaxation was the third most common (89/165 = 53.9%), Psychoeducation for Child was the fourth (70/165 = 42%), and Modeling was the fifth (56/165 = 33.9%).

Mediators and Moderators of Treatment Outcome

As the evidence-based treatment outcome literature continues to grow for child and adolescent anxiety, it is increasingly important to focus more on *what works for whom and in what context* (moderators; Kiesler, 1966) as well as *how and why* these treatments work (mediators). This review found 12 treatment outcome studies that examined nonspecific predictors of treatment outcome and nine studies that examined moderators and mediators of outcomes. Nonspecific predictors are baseline characteristics of participants who may fare better or worse than other participants, regardless of the treatment type (Kraemer, Wilson, Fairburn, & Agras, 2002). For instance, research has shown that children with more severe baseline psychopathology are less likely to benefit from CBT (Berman, Weems, Silverman, & Kurtines, 2000; Compton et al., 2014; Crawford & Manassis, 2001; Last, Hansen, & Franco, 1998), and youth whose parents experience more psychopathology and more caregiver stress and strain are also less likely to benefit from CBT (Berman et al., 2001; Compton et al., 2014; Crawford & Manassis, 2001; Southam-Gerow, Kendall, & Weersing, 2001). However, these studies do not tell us which treatments will work better for these types of youth and their families.

Research examining moderators of treatment outcome, on the other hand, identifies baseline characteristics associated with differential outcomes depending on the specific treatment. Four studies that reported moderator outcomes in RCTs for child and adolescent anxiety (excluding OCD and PTSD) were identified. As noted in the Silverman et al. (2008) update, Barrett et al. (1996) found that girls and younger children responded significantly better to CBT + Family Management than CBT alone. However, in a recent meta-analysis of RCTs, Manassis et al. (2014) found that gender, age, and duration of CBT exposure were not significant predictors of treatment outcome but type of parental involvement in CBT was. Specifically, high parental involvement that included some type of transfer of control from therapist to parent where parents learn to use contingency management strategies resulted in increased gains between posttreatment and 1-year follow-up, whereas individual CBT and CBT with parental involvement without transfer of control or contingency management did not.

In the Child/Adolescent Anxiety Multimodal Study, Compton et al. (2014) reported that across all patient characteristics, the combined CBT and Sertraline treatment was more effective than Sertraline alone, CBT alone and Pill Placebo. Compared to other primary diagnoses, youth with a primary diagnosis of separation anxiety disorder demonstrated the most benefit from the combined CBT and Sertraline condition. When looking at the mono-therapies (Sertraline alone, CBT alone), youth with generalized anxiety disorder showed greater benefit from CBT alone over Sertraline alone, whereas youth with social anxiety disorder showed greater benefit from Sertraline alone over CBT alone. Compton and colleagues hypothesized that this may have been due to the fact that the CBT in the Child/Adolescent Anxiety Multimodal Study trial was all individual format and that youth with social anxiety disorder may benefit from group CBT. However, Manassis et al. (2002) found that individual CBT was more effective for youth with social anxiety disorder than group CBT. Taken together, these findings suggest that social anxiety disorder may be one of the more pernicious of the anxiety disorders to treat and that treatment format may not be as important as treatment intensity and duration. However, more research is clearly needed to tease apart these conflicting findings.

With regard to mediators of treatment outcome, as reported in the Silverman et al. (2008) update, Treadwell and Kendall (1996) and Kendall and Treadwell (2007) reported that anxious self-talk mediated symptom reduction on core outcome measures in two separate RCTs. Hogendoorn et al. (2014) recently examined whether change in negative thoughts, positive thoughts, and/or coping strategies preceded reductions in anxiety symptoms following CBT. Contrary to Treadwell and Kendall and Kendall and Treadwell (2007), Hogendoorn et al. found that increased positive thoughts and use of coping strategies (problem solving, cognitive restructuring, and distraction) mediated a reduction in anxiety symptoms but a reduction in negative thoughts did not. Taken together, these studies provide initial support for cognitive theories upon which CBT is based but more research is needed to increase confidence in these conclusions.

Two other studies examining mediators of treatment outcomes were identified in our review. In an RCT comparing Family-Focused CBT (FCBT) and Child-Focused CBT, Wood, McLeod, Piacentini, and Sigman (2009) reported that there was a significantly greater reduction in parental intrusiveness in the FCBT group than in the Child-Focused CBT group from pre- to posttreatment and that in a moderated mediation model, age

moderated this mediation effect such that FCBT was associated with decreased intrusiveness for early adolescents but not for children. Further, in the only study examining exposure practices in an RCT, Tiwari, Kendall, Hoff, Harrison, and Fizur (2013) reported that postexposure processing of the exposure task, receiving a reward following an in vivo exposure, and being assigned an exposure homework task predicted better outcomes, whereas more preparation prior to the in vivo exposure task did not. Tiwari and colleagues theorized that postevent processing produced better outcomes because of the shift in cognitions that happens during postexposure processing.

DISCUSSION

Findings of this review replicated and extended that of earlier reviews by Ollendick and King (1998) and Silverman et al. (2008). In particular, CBT and exposure-based therapy continue to be the most well-established treatments for child and adolescent anxiety. These findings suggest that the class of interventions comprising CBT and exposure-based interventions are supported by a strong and diverse literature base and that clinicians selecting a first-line intervention for youth anxiety might search here first. Within the CBT and exposure-based interventions reviewed here, the treatment protocol that best meets a given client's presentation will likely be based upon multiple unique considerations such as youth and family characteristics, service setting, and treatment format.

Future research on CBT and exposure-based approaches should identify ways to increase the rate, consistency, magnitude, and durability of effects; decrease nonresponse rates; consider engagement issues; and examine dynamic designs as they move into complex systems of care. Thus, although there is still more work needed to enhance the effectiveness of CBT and exposure-based treatments for youth anxiety, additional efficacy trials may add little additional knowledge to our large literature base for these treatment approaches unless they speak to specific features that could potentiate or enhance what we already know to be the effects of CBT. For example, research suggests youth who receive modularized treatment in which empirically based algorithms are used to select and sequence the application of specific treatment elements improve at a faster rate compared to youth who receive standard empirically supported manuals or treatment as usual (Chorpita et al., 2013; Weisz et al., 2012). Further study in these areas might best serve our goals of identifying specific features of empirically supported treatments that can augment the beneficial effects of CBT already observed.

On the other hand, there were three treatment families that reached Level 2 status that were not primarily cognitive and/or behavioral (i.e., attention only, cultural storytelling, and hypnosis). These treatments open up the possibility of complimentary or alternative approaches to CBT and exposure-based treatments for youth anxiety. Although the treatments in this group were evaluated on primarily subclinical anxiety symptoms, their initial reports are promising. Similarly, treatments in Levels 3 and 4, although demonstrating some efficacy of findings, were tested many years ago on a homogenous group of youth. Replication of these findings is important to determine treatment robustness, as well as how well these treatments generalize to other populations. Thus, although clinicians should have clear evidence and rationale for selecting these treatments as a first-line approach over CBT-based strategies (e.g., CBT has been tried and is not working), it is promising that we have several viable options to turn to when CBT or exposure-based approaches fail or when clients refuse CBT. Future research should pursue these alternative options with scientific vigor so that we can expand the available treatments for children and adolescents suffering from anxiety disorders who may not respond well to CBT.

Treatments identified as Level 5 are informative in so much as they suggest treatments that should not be used as a first-line treatment option, at least until they are examined further. A clinician considering one of these interventions might do so with caution and first consult treatments with higher levels of support to find an intervention best meeting their client's clinical presentation. Of interest, Eye Movement Desensitization and Reprocessing (EMDR) was identified as a Level 5 treatment. This is in contrast to research in adults suggesting that EMDR has similar effects to exposure techniques, which some argue is due to the exposure clients receive in both treatment approaches (Davidson & Parker, 2001). The finding in children and adolescents that EMDR is not equivalent to exposure therapies suggests that clinicians should use caution in extending findings from studies in adult populations to child and adolescent populations. Instead, exposure therapies should be selected over EMDR for youth populations. Other treatments that focus on supportive listening or nondirective approaches only instead of directly addressing the client's fears (e.g., client-centered therapy, relationship counseling) have also been tested and have failed to meet criteria for Levels 1–4, perhaps because these treatments inadvertently work to "accommodate" anxiety, which has been shown to predict anxiety severity and treatment outcomes (e.g., Merlo, Lehmkuhl, Geffken, & Storch, 2009).

As is the case with any review of this kind, this update has a number of limitations. First, because we included only randomized trials and excluded time series designs and open trials, this review reflects only a fraction of the empirical findings for child and adolescent anxiety disorders. In addition, we are able to examine only published records, so there is no way of knowing how many treatment conditions have been tested and failed if the findings were never published. As such, a key area of future investigation is an extension of the meta-analysis conducted by Silverman et al. (2008) in which the effect sizes of the interventions reviewed here can be systematically examined and a formal evaluation of publication bias (e.g., a fail-safe *N* statistic) can be conducted. Second, we reviewed only treatments that produced positive outcomes and excluded treatments that reported negative or harmful effects. This is an important limitation to this review and reviews of its kind because as Lilienfeld (2007) pointed out, potentially harmful effects of treatments may be just as or even more important than potentially beneficial effects of treatments. Third, our strength of evidence criteria relied on a single outcome measure, and thus we did not examine the relative benefit of treatments that reduced symptoms or improved functioning on multiple outcome measures, nor did we examine the relative efficacy based on treatment outcome measure (i.e., they were all treated the same as long as the measure met a minimum criteria of psychometric strength). Relatedly, determining efficacy across multiple studies with different outcome measures is complicated; for this review we chose methodology that allows for studies with more diverse outcomes to be included, acknowledging the trade-off of less precision for more generalizability and a larger sample size.

A fourth limitation is that we were only able to use information described in the published articles to classify treatments with similar techniques together into treatment families. Thus, it is possible that there is variability within treatment families, and because not all RCTs employed assessments of treatment fidelity (especially prior to the last decade), we can't be sure that there is equivalence of techniques within a treatment family. Fifth, our effect sizes are averaged across conditions within treatment families, and we can examine effect sizes only if means and standard deviations are reported in the results to begin with, which was not a standard practice until about a decade ago. Moreover, although we included both weighted in addition to unweighted effect size estimates here, we must caution that unweighted and weighted effect sizes are both biased for different reasons. Averaging unweighted effect sizes can be biased because of the equal weight given to studies with smaller sample sizes, whereas weighted effect sizes can also be biased when the weights are derived nonrandomly (e.g., based upon sample size) allowing for the weights to be correlated with the effect sizes, resulting in biased estimates (e.g., Shuster, 2010). Sixth, we did not examine anxiety separately by type (e.g., generalized anxiety disorder, separation anxiety disorder, social anxiety disorder, etc.) to see if the findings are different by disorder. However, evidence from both epidemiological (e.g., R. S. Benjamin, Costello, & Warren, 1990) and treatment outcome (e.g., Bennett et al., 2013) studies of anxiety disorders suggest a high rate of homotypic comorbidity (i.e., anxiety disorders are highly comorbid with themselves and youth diagnosed with one anxiety disorder are more likely to experience other forms of anxiety) among this group of disorders. Indeed, in a group of 17 RCTs for CBT for anxiety among 6–19 year olds, Bennett et al. (2013) observed rates of comorbidity with other anxiety disorders ranging from 33% to 67% of the treated sample. Thus, rates of treatment success with a given anxiety disorder are often reported in youth diagnosed with more than one anxiety disorder. However, Kendall et al. (2012) suggested several factors that can influence individual treatment outcome, including the presence of comorbid internalizing disorders (e.g., Ginsburg et al., 2011), and recommended further consideration of the effects of comorbid disorders on anxiety treatment outcomes given that such research will enhance our ability to specifically tailor interventions to meet individual presentations. Indeed, although some evidence has suggested that a diagnosis of social anxiety disorder is associated with less optimal treatment outcomes (Crawley, Beidas, Benjamin, Martin, & Kendall, 2008), this might be associated with this particular anxiety disorder's high rate of comorbidity with affective disorders (Kendall et al., 2012), again underscoring the need for further study into differential treatment effects for the anxiety disorders and the effects of comorbidity, homo-, and heterotypic on treatment outcomes.

A seventh limitation is that the effectiveness parameters we reported in Table 3 are based on the "at least one" rule, which means treatment effects needed to be established in only one treatment condition for that parameter for it to be included in the table, which represents a generally liberal way of evaluating effectiveness parameters. As our evidence base continues to mature, it may be worthwhile to consider including number of times a treatment family has been evaluated along a particular effectiveness parameter to better understand how well an approach has been tested with a particular group. Seventh, the review of durability of effects examined outcomes reported only in the original RCT papers. As such, many treatments reported in this update have documented effects lasting longer than 1 year (i.e., the longest period reported in the original papers describing each RCT), but those results are presented in separate

follow-up study publications (e.g., Barrett, Duffy, Dadds, & Rapee, 2001; C. L. Benjamin, Harrison, Settipani, Brodman, & Kendall, 2013; Kendall, Safford, Flannery-Schroeder, & Webb, 2004; Kendall & Southam-Gerow, 1996). A more comprehensive review of durability effects is beyond the scope of this review but is recommended as an area for attention in other reviews. Eighth, our review only included RCTs published by mid-2013 and studies of mediators/moderators published by mid-2014, which excludes any research published since then, underscoring the importance of regular reviews of this type.

Although we present "effectiveness" information in our review, this should not be viewed as a substitute for a review of "true" effectiveness studies. Given the relative infancy of effectiveness trials available to review, inclusion of these indicators was viewed as important to highlight. However, this is not seen as a replacement for the real work that still needs to be done examining how treatments provided to "real-world youth" by "real-world therapists" in "real-world systems" fare. In fact, early effectiveness works suggests that despite the mountain of efficacy findings, there are some conspicuous disappointments in the application of CBT to community settings (e.g., Southam-Gerow et al., 2010). Preliminary findings suggest that some of these might be overcome by minor design changes that allow treatments to be dynamic and responsive in real time (Weisz et al., 2012). As the evidence base for "true" treatment effectiveness studies grows, future reviews may begin to critically look at the relative effectiveness of treatments and treatment designs in real-world settings.

This review tells us *what* the most common elements are among our best-tested treatments. However, it does not tell us what the *active or key ingredients* are in CBT programs, nor the *best sequence* for combining these common elements. Preliminary research suggests that providing exposure-based practices earlier in treatment results in shorter treatment duration (Gryczkowski et al., 2013). However, research has yet to isolate this key difference in treatment sequencing in an RCT. This is a very important next step in treatment outcome research, as it is very possible that incremental learning could be critical such that learning Technique A then Technique B, followed by Technique C, in this particular order, provides the most improvement. It is also possible that some techniques work better together, whereas others may serve to contradict one another (e.g., as previously noted more cognitive preparation prior to exposure does not predict better outcomes; Tiwari et al., 2013). Isolating key ingredients and sequences of these ingredients via dismantling or other advanced RCT approaches (e.g., Sequential Multiple Assignment Randomized Trial; Collins, Murphy, & Strecher, 2007) will be important over the next decade of treatment outcomes research for youth anxiety.

Similarly, this review suggests that whereas we know quite a bit about *what* works for children and adolescents with anxiety, we know quite a bit less about *how and why* these treatments work. Although our review of mediators and moderators of treatment was not as structured as our review of the strength of the evidence, our comprehensive literature review suggests that relative to the efficacy literature, we have very few well-designed studies that examine the causal mechanisms of our best-tested treatments. At the same time, CBT and the most common techniques found across Level 1 treatments (exposure, cognitive, relaxation) are grounded in theories of anxiety psychopathology. In other words, despite not having a voluminous amount of treatment outcome studies dedicated to causal mechanisms for child and adolescent anxiety treatment, we do know quite a bit about the origin of youth anxiety, which supports a multidimensional model including genetics, temperament, parenting, conditioning experiences, and cognitive styles (e.g., Higa-McMillan, Francis, & Chorpita, 2014). Our best-tested treatments address conditioning (via exposure) and cognitive styles (via cognitive restructuring) and to some extent parenting. Thus although there are relatively fewer studies examining the mediators of treatment outcome for child and adolescent anxiety, the treatments in our Level 1 category have a firm grounding in experimental psychopathology.

Perhaps most important to the field now are how to combine our evidence bases to make evidence-informed clinical decisions and how to successfully implement evidence-based services in youth mental health systems. Several researchers (e.g., Chorpita & Daleiden, 2014; Kazdin & Blasé, 2011) point out that we are unlikely to have a codified treatment manual for every possible context encountered in reducing mental health symptoms such as anxiety. Thus, consistent with recommendations previously presented in this journal (e.g., Kendall et al., 2012), the sooner we develop a strong theory of change paired with a structured messaging strategy to allow that theory to guide practice, the sooner we can incorporate theory into the inevitable real-time design and adaptation of treatments. Just as manuals represent a structure for delivering knowledge obtained from randomized trials, there ought to be a similar guiding structure that is theory driven but equally grounded in experimental research.

Finally, identifying effective implementation practices for our best-tested treatments represents another important area of future inquiry. For instance, the research on therapist training and competencies suggests that merely attending one-time workshops are not effective in changing therapist behavior or improving competency in evidence-based approaches such as CBT

(e.g., Beidas & Kendall, 2010; Herschell, Kolko, Baumann, & Davis, 2010) but that behavioral rehearsal with ongoing consultation is key to enhancing treatment integrity (e.g., Beidas, Cross, & Dorsey, 2014; Beidas, Edmunds, Marcus, & Kendall, 2012; Bearman et al., 2013). Prioritizing these research questions will take us from simply knowing what treatments work to knowing how they work and how to best implement them in everyday service systems, which would greatly expand the application of research to guide treatment planning, delivery, and refinement in a wide variety of contexts, so that more children, adolescents, families, and communities can benefit.

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