THE-EFFECTS OF SCHOOL-BASED COGNITIVE BEHAVIORAL INTERVENTIONS FOR

INTERNALIZING PROBLEMS: A META-ANALYSIS AND AN EXAMINATION OF THE

QUALITY OF THE EVIDENCE-BASE

A Dissertation

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ABSTRACT

Cognitive Behavioral Therapy (CBT) in a clinical setting is an effective intervention used to reduce internalized problems, particularly those of anxiety and depression disorders. Because schools provide one of the best environments in which to access children to provide treatment programs to meet their needs, a growing body of evidence suggests the implementation of school-based CBTs to reduce a variety of internalizing problems of children.

The first part of this study addressed the evaluation of the quality indicators of school-based CBTs on students with or at risk of developing any types of internalizing problems. A comprehensive search of the literature yielded fifty group research studies based on the inclusion/exclusion criteria. Twenty-four quality components across eight quality indicators categories were coded and analyzed for each study. The results of review demonstrated that only four of the fifty studies met all components of the quality indicators. The significant indicators that the studies were missing were the disability or risk status of participants, a description of specific training, and the qualifications for implementer. Moreover, the findings of the study showed that implementation fidelity was missing for most studies. Future directions for research and practice are discussed.

The second part of the study was a systematic and meta-analysis examining the efficacy of school-based CBTs in reducing the internalizing problems of children within in a Multi-Tiered System of Support (MTSS). This meta-analysis included fifty studies involving the use of school-based CBTs for treatment of internalizing problems. The finding of the second study suggests that school-based CBTs may be useful to minimize internalizing problems of children within the MTSS. The results indicated a small effect for reducing internalizing problems in

children. Results of the current meta-analysis also demonstrated that the statistically significant differences between the studies was not due to random differences in the effect size. The results of the moderator analyses indicated that levels of the intervention, types of the implementers, and types of the internalizing problems were not statistically significant moderators of treatment. Future directions for research and practice are discussed.

DEDICATION

I would like to dedicate this dissertation to my family who have been a great sources of inspiration and support. I could not have done this without you!

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CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Emotional and behavioral problems are categorized into two different classes by researchers; internalizing and externalizing problems (Achenbach & Edelbrock, 1978). Externalizing problems, which represent uncontrolled outer-directed behaviors, are easily observable and, and often lead to discomfort in other teachers and peers. Key symptoms of externalizing problems are rule breaking, fighting, and impulsive behaviors (Gresham et al., 1998). The DSM-IV classifies following disorders into externalizing problems: 1) conduct disorder, 2) oppositional-defiant disorder, and 3) attention-deficit/hyperactivity disorder. The second class of problem behavior is internalizing behaviors that are directed toward individuals and not easily observable by others (Gresham et al., 1998). Internalizing problems are defined as an over-control of emotions and include symptoms such as sadness, fears, and somatic complaints (Achenbach & Edelbrock, 1978) and are shown in a broad range of disorders such as anxiety-related disorder, depression, social withdrawal, and somatic complaints (Merrell & Gueldner, 2010). Reynolds (1992) defined internalizing problems as a "secret illness" that is unknown by others but only by the individual.

Therefore, the first study of this current research reviewed the literature using the CEC (2014) research quality criteria to evaluate the quality of the school-based CBTs to treat children with internalizing problems in school-based settings and those who were suffering from internalizing problems. Symptoms of internalizing problems may not be recognized as much as externalizing problems, and students with any types of internalizing problems are likely to be quiet and follow the rules in school settings without any problems (Herzig-Anderson et al.,

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2014). Therefore, educators have not viewed the internalizing problems in children as a significant issue in an educational system, and these problems are usually missed and left untreated by teachers in school settings or by parents in their homes (Kendall, 1994). Thus, studies have demonstrated that the actual prevalence of a broad range of anxiety problems in children might be higher than currently identified because many children with these problems remain unidentified (Neil & Christensen, 2009).

Internalizing Problems

According to the Merrell (2010), anxiety disorder is one of the main characteristics of internalizing behaviors and comprises the largest group of internalizing disorders. Some level of anxiety is present in the developmental outcomes of children, but anxiety is considered to be problematic when a high degree of anxiety occurs and affects daily situations and daily functioning and inhibits healthy development (Miller et al., 2011). Anxiety disorders are characterized by these excessive feeling of anxiety and worry about a variety of different situations (DSM-IV) and are one of the most common mental illness that are presented during childhood and adolescence (Neil & Christensen, 2009). A National Institute of Mental Health (NIMH) reported in 2011 demonstrated that 20% of youth in the United States meet the diagnosis criteria for anxiety disorder, and the estimated lifetime rate of anxiety is 28.8% (Kessler et al., 2005).

Twelve different types of anxiety disorders among children and adults can be classified, which are separation anxiety disorder, selective mutism, specific phobia, social anxiety disorder, panic disorder, panic attack, agoraphobia, generalized anxiety disorder, substance/medication-induced anxiety disorder, anxiety disorder due to another medical condition, other specified

anxiety disorders and unspecified anxiety disorder (American Psychiatric Association, 2013). However, the most common anxiety disorders are generalized anxiety disorder (GAD), separation anxiety disorder (SAD), and social phobia (SP; Silverman & Kurtiness, 2001). Previous studies have demonstrated that the types, symptoms, and levels of anxiety vary with age (James et al., 2013; Last et al. 1996). For instance, James et al. (2013) showed that school-age children with an anxiety disorder are likely to have worries related to injury from daily environmental events, but that older children are likely to suffer more from social and academic activities such as school performance or concern about their health. Moreover, several studies have demonstrated that someone with anxiety can suffer from more than one type of anxiety disorder at the same time. For instance, Last et al. (1996) showed that 65% to 95% of anxiety children and youth were also diagnosed or showed evidence of suffering from comorbid anxiety disorders.

Depression is another common mood disorder under the category of internalizing problems that is characterized by excessive sadness and a lack of interest in social activities (Liu et al., 2011). In the United States, the estimates of major depressive disorder for the entire population range from 1.3% to 7.3%, and the estimates drawn from a sample of school-aged children community have shown that approximately 2% of school-aged children meet the criteria for a major depressive disorder (Jellinek et al., 1998). Researchers also estimated that 8% of adolescents experience depression (Collins et al. 2004). These children and adolescents with depressive symptoms are associated with a broad range of problems including smoking cigarettes, substance abuse, and attempts at suicide (Brimaher et al., 1996). Reviews of the literature also indicate that school-aged children with symptoms of depression disorders are

likely to show poor academic performance, dropout from school, and engage in substance use (Gilham, Shatte, & Freres, 2000).

Depression and anxiety disorders often co-occur in children, and studies suggest that a strong relationship is present between anxiety disorders and depression disorders and ADHD (Wilmshurt, 2005; Costello et al. 2003, Pine et al. 1998; Las et al., 1996). Moreover, an existing anxiety disorder is a risk factor for depression disorder (Webster (2001). For instance, Costello and his colleagues demonstrated that a child with anxiety disorder is more than eight times more likely to experience depression than a child without anxiety, and 22% to 44% of children with anxiety also suffer from depression (Boyd & Gullone, 1997). Webster (2001) also reported comparable results, wherein children with anxiety or members of at-risk group reported significantly more depression symptoms than the intervention condition.

Social withdrawal and somatic complaints are considered as symptoms rather than a specific disorder and are categorized under the depression and anxiety (Rubin et al., 2013; Storey & Smith, 2008). Social withdrawal refers to an isolation of child from the peer group and a lack of social experience (Rubin et al., 2013). Somatic complaints include physical pain and discomfort (Storey & Smith, 2008). Both social withdrawal and somatic complaints cause students to demonstrate low academic achievement and show symptoms of anxiety and depression disorders (Rubin et al., 2013; Storey & Smith, 2008).

Without the treatment of internalizing problems such as anxiety or depression, these issues may experience significant adverse impacts on their social development and their relationships with peers such as limited social interactions or rejection and difficulties in a school environment (Bittner et al., 2007; Ginsburg et al., 2012; Manassis et al., 2010). Moreover, internalizing problems can cause a lack of access to learning and a reduction in the learning

ability of a student in school settings (Beidel et al., 2000). Internalizing problems also have been identified as one of the risk factors for long-term developmental psychological and mental disorder, high-risk behaviors, and school problems in later adolescence (e.g., Albano, Chorpita, & Barlow, 2003; Petersen et al., 1993) including substance use, not being members of school groups, depression, the idea of suicide, and actual suicide attempts (Sareen et al., 2005). Therefore, the development of effective interventions for internalizing problems as soon as early is critical and an essential public health priority (James et al., 2013; Albon & Schneider, 2007).

Cognitive Behavioral Therapies

Previous studies have demonstrated that short-term psychological interventions are effective methods to treat internalizing problems in children and adulthoods (Webster et al., 2001). Cognitive Behavioral Therapies or Interventions (CBTs) are one of these well-established evidence-based practices to treat a number of clinical emotional and behavioral problems in children and adolescents including depression, anxiety and a variety of disruptive behaviors (Barrett et al. 1998; Kendall et al. 1997; Mennuti & Christner, 2012; Seligman & Ollendick, 2011). The primary goal of CBT is to teach individuals to identify beliefs that monitor automatic thoughts and to replace the negative automatic thoughts with more realistic and adaptive thoughts (Kendall & Bemis, 1983). CBTs represent cognitive and behavioral perspectives (Mennuti & Christner, 2012), which include three major theories: 1) coping-skills therapies, 2) problem-solving therapies and 3) cognitive restructuring (Mahoney & Arnkoff, 1978).

Beck developed the core model of CBT in 1970, and, according to the Beck's design, the central belief of the CBT is that individual responses to the environment are maintained by thoughts and cognitive process (Rutherford, Quinn, & Mathur, 2004). In Beck's approach,

emotional distress and problematic behaviors in individuals are the consequence of automatic thoughts that include a variety of maladaptive cognitions like general beliefs about the world, the self, and the future (Beck, 1976). Thus, during the CBT process, therapists work with patients together to identify these problems and analyze the relationship among thoughts, feelings, and behaviors to teach clients to: 1) monitor automatic thoughts, 2) analyze the relationships between condition and behavior, 3) check the reliability of the automatic thoughts, 4) determine realistic cognitions for desirable views, and 5) identify beliefs that cause negative automatic thoughts (Kendall & Bemis, 1983).

The CBT can be delivered to an individual, a group or parents, and children and adolescents lasting in duration from nine to twenty sessions (James et al., 2013). In some cases, intervention can be extended beyond six months and include the application of "booster sessions" to help children to manage and generalize internalizing problems in new situations (Seligman & Ollendick, 2011).

Because the roots of CBTs are in learning and cognitive theory, CBTs include both cognition and behavioral interventions to change the perceptions and behaviors of an individual (Dobson, 2000). Cognitive interventions in CBTs include self-control techniques such as standardized protocols, correcting thinking errors, establishing guiding self-statements and verbal self-instructions to identify maladaptive thoughts and cognitive schemas (Leichsenring et al., 2006). The behavioral interventions that are used in the CBTs aim to address problem behaviors adapted from the principles of learning theory that are classical, operant conditioning (Kana et al., 1997) along with an examination of environmental influences and skills deficits (Mennuti & Christner, 2012), and include modeling, reality exposure, role playing and relaxation training (Silverman 1996).

Previous Studies on CBTs

Previous studies have demonstrated that CBTs have been tested with different types of problems and populations. To date, more than 250 meta-analyses (e.g., Beltman, Oude Voshaar, & Speckens, 2010; Hofmann & Smits, 2008; Öst, 2008; Coull & Morris, 2011) have examined the efficacy of CBTs for 17 different disorders such as depression, chronic medical condition, addictions, schizophrenia and other psychotic disorders, eating disorders, and distress related to pregnancy complications (Hofman et al., 2012). Previous studies have demonstrated the effectiveness of the CBTs with the emotional and behavioral needs of children (Kendall & Hedtke, 2006).

Kendall (1994) published a randomized clinical trial of CBT. Kendall (1994) used both cognitive and behavioral techniques with 47 children ranging in age from 9-13 with anxiety disorder to examine the efficacy of the intervention. A 16-session cognitive-behavioral treatment was compared with a waitlist, and results of the study showed the significant beneficial effects of the intervention both after treatment and the maintenance of gains at the 1-year follow-up.

Silverman et al. (2008) also reviewed 32 randomized controlled trials studies and demonstrated empirical evidence for the substantial effects of CBT for using with anxious children. The study demonstrated the efficacy of the CBTs treatments for phobic and anxiety disorders, and they reported that CBTs are effective treatment for children with anxiety disorder within in individual or group formats with and without parent involvement.

More recently, Albon and Schneider (2007) examined 24 randomized control trial studies with a meta-analysis to demonstrate the efficacy of the CBTs for childhood anxiety disorder during the post-treatment and follow-up assessment. The results showed that 72% of the referred

children with anxiety did not meet the clinical level of anxiety after CBT treatments (Albon & Schneider, 2007).

Other previous studies have also demonstrated the effectiveness of CBT for children and young adolescents with depression disorders (Clarke et al., 1999; Kazdin & Weisz, 2003). Recently, Cardemil, Reivich, and Seligman (2002) presented the efficacy of a CBT program (Penn Resiliency Program). Many high-quality studies have been conducted, and results of previous studies have provided empirical support for identifying CBTs as an evidence-based intervention for children and early adulthood within the different ethnic and cultural groups. (Seligman & Ollendick, 2011). Recently, Garmy et al., (2015) evaluated the implementation of a Universal-based CBT program to prevent depression. Sixty-two students aged 14 received treatment once a week in five-hour sessions during a ten-week period. The results of the study demonstrated that most of the students rated their symptoms of depression as significantly lower at the post-test and at a one-year follow-up.

Transportability of CBTs in Schools

Although the literature provides support for cognitive behavioral intervention therapy as an effective intervention for a variety of internalizing problems in clinical environments, a growing body of evidence also shows that CBT may be successful in reducing a variety of internalizing problems of children in applied settings such as schools, outpatient clinics and primary care (Schaeffer et al., 2005). School is one of the best environments to access children for providing treatment programs their needs (Mifsud & Rapee, 2005). Researchers have started to focus on using clinical interventions for reducing symptoms of internalizing problems in

school settings, and, during the last 15 years, different formats of the CBT intervention have been adapted and evaluated in school settings (Mifsud & Rapee, 2005).

There are two formats of CBTs in school-settings: 1) structured manualized CBTs and 2) modular CBTs (e.g., Barrett, Dadds, & Rapee, 1998; Chorpita, 2007; Kendall & Hedtke, 2006). Structured manualized CBTs include explicit cognitive and behavioral techniques with specific sessions and instructions for specific types of internalizing problems. Examples of structured manualized CBTs are Coping Cat (Kendall & Hedtke, 2006), the Coping Koala program (Barrett et al., 1998), Skills for Academic and Social Success (SASS) (Masia-Warner 2007), Intervention with Adolescents with Social Phobia (IAFS) (Sanchez-Garcia, 2009) and the Building Confidence program (Galla 2012).

Modular-based cognitive therapy is another type of the CBT treatment option that allows a practitioner to develop interventions based on the specific needs of individuals from a variety of modules in the program manual (Chorpita, 2007). Within the emerging evidence, previous studies also have used modifications and additions to CBTs protocols and suggested for children within the school settings.

The results of the studies have demonstrated the promise of transportability of CBT to school settings both in early intervention and the prevention of internalizing problems (Mifsud & Rapee, 2005). For example, Barrett and Turner (2001) used the FRIENDS program to evaluate the effects of universal CBT in reducing the anxiety level of 489 children. Children were assigned randomly one of the three conditions: 1) psychologist-led intervention, 2) teacher-led intervention or 3) a control group. Therapists saw participants in the CBT intervention group for weekly sessions of 2 hours during the 12 weeks of a standard school curriculum. Parents were also invited to attend four parent evenings. The findings of the study demonstrated that treated

participants reduced their levels of anxiety under the diagnostic criteria for anxiety disorder across psychological and teacher intervention conditions.

Recently a few studies have also tested the long-term efficacy of a school-based CBT for children who are at risk of developing a disorder. For instance, Masia-Warner et al. (2004) examined the effectiveness of the Skills for Social and Academic Success (SASS) Program to reduce the level of anxiety with 35 anxious adolescents. In this study, 35 children were randomly assigned either to a 12-weekly group school sessions of approximately 40 minutes each or to a 16-weekly waitlist group, and the results of the nine-month follow-up phase were shown. The study provided evidence that the children in the intervention groups showed a more significant reduction in the level of social anxiety than did the wait-list group. Also, the study demonstrated that the efficacy of the intervention could be maintained during the nine months after treatment.

Many high-quality studies have evaluated the effects of school-based CBT on students with depression within different types of programs such as The FRIENDS program (Barrett & Turner, 2001), the Penn Program (Cardemil, 2007), the Feelings Club (Manassis et al., 2010), and The Problem Solving for Life program (Sheffield et al., 2006) within the MTSS including Tier I, Tier II and Tier III interventions (Garmy et al., 2014). Recently, Shirk et al. (2012) demonstrated the effects of a school-based individual CBT depression prevention program adolescents. Fifty students with major depressive disorder, dysthymic disorder, received a manually guided 12-session individual CBT protocol. The results of the study showed a significant decrease of depressive symptoms such as in life stress, trauma history of the participants.

Most of the time, these manualized interventions may miss the specific needs of individuals because of the lack of the flexibility (Mennuti, Freeman, & Christner, 2006).

Therefore, Chorpita (2007) introduced modular cognitive therapy to provide more flexibility and the use of more techniques for specific problems of individuals within the evidence-based practices. The modular CBT protocol included 13 individual treatments modules selected by considering an individual's needs. Chorpita et al. (2004) evaluated the efficacy of modular CBT for eleven youths ranging in age from 7 to 13 with anxiety, mood, and behavioral disorders. The results demonstrated that 7 of the participants who completed the intervention did not meet diagnoses criteria of anxiety disorder at post-treatment and 6-month follow-up assessments.

Multi-Tiered Systems of Support

The multi-tiered system of support (MTSS) is the alternative approach to the traditional assessment for identifying and improving academic and behavior needs of all students in school settings with a multi-tiered system of assessment and instructional process (Bradley, Danielson, & Doolittle, 2007). The Response to Intervention (RTI) should include two significant components: 1) evidence-based interventions to provide high-quality instruction and 2) reliable assessment to identify students' needs and process on each tier (Gresham, 2002). However, many types of the RTI model are used in school settings instead of a single model. Most of the RTI programs are based on a three-tier model and start with the implementation of schoolwide interventions (Bradley, Danielson, & Doolittle, 2007). Tier I, referred to as universal response, includes a high-quality instruction to all students in general education settings, and universal screening of all students to identify the needs of students and identify at-risk students, and educational outcomes of all students (Gresham, 2002). Approximately 75-80% of all students in Tier I successfully reach the learning needs of the universal level (Ogonosky, 2008). After delivering Tier I with evidence-based intervention with high quality, only 15%-20% will need

additional assistance, and they will receive supplemental instruction at the Tier II level (Ogonosky, 2008).

Tier II level includes more intensive and systematic instruction, which usually requires specific daily activities up to 20 weeks, and weekly or biweekly progress monitoring to determine the response of students to intervention and their development in small groups of students (Vaugh et al., 2007). With selective intervention at Tier II, some students may still need additional support to reach their academic and behavioral achievements (Ogonosky, 2008).

Tier 3 includes more targeted and individual evidence-based interventions, and those students comprise about only 2%-5% of all students (Vaughn et al., 2007). Students usually receive services in a one-to-one or small group setting five days per a week for least 45 minutes daily for up to 20 weeks (Vaughn et al., 2007).

Quality of School-Based CBTs Studies

The other critical component in applying MTSS is providing evidence-based intervention (Bradley, Danielson, & Doolittle, 2007). In education, evidence-based intervention refers to practices that are efficient and meet high-quality research standards. However, a growing body of evidence of CBT also shows its effectiveness in reducing the anxiety of children in schools and other settings with modifications and additions to CBT protocols (Schaeffer et al., 2005). These changes and additions to CBT in school settings may affect the outcomes of studies significantly and can weaken the power of the studies. Therefore, evaluating the essential indicators of CBTs' in research is critical.

In recent years, researchers have suggested that educators use practices or adapt programs that have shown scientific evidence of effectiveness as reported by scientific researchers for

increasing and establishing more positive outcome results for students (Salvin, 2008b). Previous reviews have demonstrated that most interventions delivered in school settings were not evidence-based, and most evidence-based interventions in school settings were not implemented correctly (Ringwalt et al., 2003). This lack of applying evidence-based treatments in school settings is a significant barrier to treating emotional and behaviors problems efficiently (Ruffolo & Fischer, 2009).

Ruffolo and Fischer (2009) found that evidence-based interventions were missing in school settings for two reasons. The first reason was that many school workers, including mental health providers, were not trained to deliver evidence-based intervention in school settings, and the second reason was that evidence-based interventions were likely to be too difficult to implement in school settings (Ruffolo & Fischer, 2009). Until recently, standard or quality indicators for evaluating the quality of experimental and quasi-experimental studies in special education did not exist (Gersten et al., 2005).

However, many issues continue to be discussed in identifying EBPs such as specific quality indicators that are necessary for valid and reliable study (Cook, Smith, & Tankersley, 2012). To address the need for standards for EBPs in special education, Gersten and colleagues guided the development of these standards for group comparison research studies (Gersten et al. 2005). Then, the Council for Exceptional Children (CEC) categorized and identified essential quality indicators for evidenced-based practices in special education to determine trustworthy intervention studies in special education.

Purpose and Research Questions

Studies have demonstrated that several different either manualized or modular CBTs had been developed for children with internalizing problems, and many researchers indicated that establishing well-established treatment remains a significant issue (Silverman, Pina & Viswesvaran, 2008). However, Seligman and Ollendick (1998) found that CBTs is the first-line treatment for children with internalizing problems especially, but there is not enough systematic study to help clinicians to choose or adopt traditional CBTs methods to their unique situations and children. Moreover, they also noted that high-quality treatment of CBTs is still needed for children with internalizing problems (Silverman, Pina, & Viswesvaran, 2008). According to previous studies, many issues remain related to the quality of interventions such as establishing good-quality interventions, a determination and selection of measurement metrics, the lack of the statistical power, missing data and outliers. Thus, the first study focuses on the essential quality indicators of CBTs and applies the rubric that was adapted from the CEC (2014) research quality criteria to evaluate the quality of the school-based CBTs to treat a broad range of internalizing problems of students within the MTSS.

To date, however, a limited number of studies have evaluated the efficacy of school-based CBTs for specific types of internalizing disorders such as anxiety disorder or depression disorders (Nehmy, 2010; Neil & Christensen, 2009; Hil-Panahan et al., 2007; Matthew et al., 2012). Additionally, there is neither a review nor a meta-analysis that has examined the efficacy of school-based CBT for all types of internalizing problems. Moreover, no reviews and meta-analysis have focused the effects of school-based CBTs within the Multi-Tiered System of Support (MTSS). Therefore, the second study demonstrates the effectiveness of the school-based CBTs to reduce internalizing problems of children within in the MTSS. A meta-analysis method

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will be selected for developing conclusions with a combination of data of several high-quality studies that examine the possible moderators of the treatment response of school-based CBTs for children with or at risk for developing any types of internalizing problems.

CHAPTER II

SCHOOL-BASED COGNITIVE-BEHAVIORAL INTERVENTIONS FOR

INTERNALIZING PROBLEMS: THE QUALITY OF THE EVIDENCE-BASE

Multiple reliable published studies define evidence-based practices (EBPs) as treatments that have been proven for improving student outcomes and that offer a chance of benefits for individuals (Odom et al., 2005). The EBPs movement originated with the field of medicine to test the effectiveness of practices in the 1990s (Kratochwill et al., 2003). During the last several decades, researchers have extended EBPs to the field of educational and school psychology (Kratochwill et al., 2003). Recently, national education movements and reforms have provided more support to use evidence-based practices in school settings. For example, education reforms such as the No Child Left Behind Act (NCLB; U.S. Department of Education, Office of the Deputy Secretary, 2001) have required educators to use effective practices within educational settings based on evidence-based research (Odom et al. 2005). Moreover, individuals covered ty the Disabilities Education Improvement Act of 2004 have also demonstrated the importance of training of teachers in scientifically based interventions for improving the academic and behavioral outcomes of students. Because of educational reform and national policies, some educational agencies or professional organizations such as the What Works Clearinghouse (WWC) and the Council for Exceptional Children (CEC) intend to determine evidence-based interventions for children and develop high-quality standards for identifying evidence-based best practices.

However, little attention has been paid to using EBPs in real-word settings such as schools, and issues remain with the integration of EBPs in practice by both special educators and

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school psychologists (Cook & Schirmer, 2006; Kratochwill et al., 2003). Previous studies have determined cleared that a critical gap exists between research and practices, and most educators remain likely to use traditional sources and interventions instead of using evidence-based practices that researchers have found to be effective. This has occurred even though most traditional interventions have been found to be infective (Cook & Cook, 2011). Unfortunately, most teachers still describe these traditional methods as the best methods to educate their students (Cook et al., 2008). Therefore, a misunderstanding exists concerning determine school-based evidence-based effective methods and what main factors make them efficient (Weist & Evan, 2005).

The primary cause for overlooking of evidence-based methods in a school setting by educators is that most educators do not have precise definitions of EBPs from researchers or directions to apply EBPs, even though many high-quality studies have demonstrated the efficacy of evidence-based research (Lloyd & Lioyd, 2014). Moreover, many school workers such as teachers and psychologists do not have the training for implementing EBPs in school settings (Ruffolo & Fischer, 2009). Often, EBPs merely provide abstract guidelines about the goals (Greenwood et al., 1988). Because of inadequate guidelines, teachers become more frustrated, and they are more likely to implement interventions of poor quality. Therefore, these practices cause performance difficulties by educators in the school settings, and, most of the time, teachers are likely to adopt traditional interventions in their unique situations (Fuchs & Fuchs, 1990).

In the recent past, researchers have aimed at determining effective interventions and required standards for practices to be considered as evidence-based practices for various research methodologies (What Works Clearinghouse, 2017). The primary goal of the determination of EBPs standards is evaluate the validity and reliability of a study to determine the evidence-based

and promising interventions for educators (Gersten et al., 2005). In the past several years, new guidelines for researchers have been created for general teaching and school psychology to evaluate standards and quality indicators in special education (Gersten et al., 2005). Gersten et al. (2005) developed essential and desirable quality indicators for group experimental and quasi-experimental research and guidelines for evidence-based practices. Then, Horner et al., (2005) established standards and quality indicators for identifying evidence-based practice using a single-subject research design. Recently, The Council for Exceptional Children (CEC) developed clear guidelines to determine the quality indicators for comparing experimental group designs and for single-subject experimental designs.

According to the CEC (2014), for considering a study in special education as an evidence-based practice, a study should meet quantity of research (research designs) and quantity of research (methodological quality) requirements. Only a few research designs have been accepted as evidence-based practice in special education because without applying a systematic and trustworthy research design, the results of studies may cause either insufficient or incorrect findings (Cook et al., 2008).

The CEC (2014) considers two research criteria as indicators of trustworthy research in special education. A high-quality study must do a group comparison via randomized experiments, nonrandomized quasi-experiments, regression discontinuity designs, or single-subject research with some specific requirements (Cook et al., 2014). For eliminating the gap between research and practice, a researcher should produce good interventions in real settings with real persons (Cook et al., 2008). Thus, for determining whether a practice is evidence based, a study also must meet the requirements for the CEC quantity standards (CEC, 2014). The CEC (2014) provided 24 quality components across eight quality indicators. The quality indicators

according to CEC are: 1) context and setting; 2) participants; 3) intervention agent; 4) description of practice; 5) implementation fidelity; 6) internal validity; 7) outcome measures/dependent variables; and 8) data analysis.

Additionally, Kazdin and Weisz (1998) said that the characteristics of reliable and high-quality studies included randomized controlled trials, well-described and replicable treatments, tests with clinical samples, tests of clinical significance, and broad-based outcome assessment including metrics of real-world functioning.

Cognitive behavioral interventions are short-term practices used in a variety of clinical problems in children and adults including anxiety, depression, attention deficit hyperactivity disorder (ADHD), conduct disorder, eating disorder (Manassis et al., 2002). Many different types of formal manualized CBTs exist such as Cool Kids (Rapee et al., 1993), Copping Cat (Kendall & Hedtke, 2006) Cognitive Behavior Group Therapy-Adolescent (CBGTA-A; Albano, 2000), Coping Power Programs (Lochman, Wells, & Lenhart, 2008). However, these manual CBTs suffer from limitations such as a lack of the flexibility or not meeting the needs of individuals.

To overcome these problems, Chorpita (2007) developed a flexible program for educators. This modular cognitive program is manually based and provides guidance and common practice objects and elements for the specific needs of students (Chorpita, 2007). Structured manualized CBTs are used as the best interventions for students in education settings because they include step-by-step procedures with specific activities. The manual-based CBTs also educators to develop a high-quality intervention with a selection of techniques and strategies based on the needs of each students (Chorpita, 2007).

Recently school workers and researchers have applied CBTs in school settings with modifications and additions to help children and youth with dealing their academic and

behavioral problems, and the results of studies have demonstrated that CBTs are promising for use in school settings. (Gresham, 2004). However, many types of either manualized or modular exist CBTs for children, and their selection and use by educators is problematic and unclear because the EBPs may not be fit for every school or class environment (Cook & Schirmer, 2006). Teachers do not have as much experience as mental health professionals in delivering psychological interventions such as CBTs (Neil & Christensen, 2009). Therefore, educators are likely to adopt effective school-based interventions of their own with systematic support of experts (Gersten et al., 2000).

The results of previous studies have shown that programs with teacher leaders exhibited a significant decrease of the level of anxiety in school settings, and the delivery of CBTs by teachers may result in a slightly smaller efficacy than interventions provided by mental health professionals (Sheffield et al., 2006). Recently, Neil and Christensen (2009) evaluated the efficacy and effectiveness of the school-based prevention and intervention programs, and they found that 15 of 20 universal, selective and indicated programs were based on principles of CBTs (Neil & Christensen, 2009). However, they demonstrated that CBTs have significant effects on reducing the level of anxiety with a median effect size of 0.57 but that not all programs were successful in preventing or decreasing the level of anxiety disorders (Neil & Christensen, 2009). Some studies also demonstrated similar results for depression disorder. For instance, Sheffield et al. (2006) used the Adolescent Coping and Emotions Program for 629 adolescents aged between 14-15 years with teachers during an eight-week period. The results did not indicate any significant changes with respect to control groups. The main reasons for this unsuccessful implementation should be provided (Neil & Christensen, 2009).

When adopting or modifying a CBT, it is critical that school-based CBTs should be delivered with fundamental core elements of a program accompanied by the monitoring of practices. With clear standard quality guidelines, researchers and educators can then properly evaluate studies of evidence-based interventions. For example, Neil and Christensen, (2009) assessed the quality ratings of school-based studies based on three criteria: 1) randomization, 2) double-blinding, and 3) withdrawals using a 0 to 5 rating system. The finding of the study showed that CBTs studies were inadequate and that only 3 of 15 CBT studies received a score of 3. They recommended that future studies should focus on improving the quality of the studies because low-quality studies may overestimate their findings. Similarly, Hofmann et al. (2012) collogues reviewed 106 meta-analysis studies examine the efficacy of CBT across a variety of disorders within different settings and population. They demonstrated that, while CBTs have substantial evidence for the treatment of anxiety disorders, the studies were not generally of high-quality. Moreover, they found that many studies in their meta-analysis were missing context and setting and essential information about their samples. Therefore, they believed that more high-quality studies are needed to estimate the magnitude of the effects better.

To date, no studies have examined the quality of studies that have tested the efficacy of CBTs for internalizing problems. The primary purpose of this current study will be to apply the guidelines adopted from CEC (2014) Group Comparison Research Quality Indicators to evaluate the quality indicators of school-based CBTs on students with or at risk for developing any types of internalizing problems. The eight categories with a total of 24 components will be evaluated.

Method

A systematic review protocol was developed from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher, Liberati, Tetzlaff, & Altman, 2009).

Study Identification

Literature search. Studies will be identified through electronic searches. To address the current research question, the electronic databases of *pyscINFO*, *Eric*, *ProQuest*, *Google Scholar*, and *Refworks* will be searched for studies. The literature search will include studies containing one of the following keywords: "*internalizing problems*," "*anxiety*," "*depression*," "*behavioral therapy*," "*school-based cognitive behavioral therapy-intervention*," "and *cognitive behavioral therapy-intervention*," "*CBT*," and "*CBI*." This current study does not include a specific time period because of the limited number of publications. The abstract of each study is reviewed, and acceptable studies will be selected based on the inclusion criteria. The search results will be listed.

Inclusion criteria. Studies will be included in the current study if they meet the following inclusion criteria: 1) the study must be published in a peer-reviewed journal or in a thesis format; 2) the study must be published in English; 3) the study must involve participants with a primary diagnosis of at least one type of internalizing problems or at risk to develop internalizing problems; 4) the study must include participants aged 18 years or younger; 5) the study must involve group-designed research, and 6) the study must have participants receiving school-based CBT with a treatment and comparison groups in school settings. The studies that lack any of one of these inclusion criteria will be excluded from the current review. A total of 50

articles met the inclusion criteria from the primary electronic search. See Figure 1 for a flow

chart of the study selection process.

Application of Quality Indicators

The quality of research will be evaluated adopting a rubric based on the Council for

Exceptional Children (CEC) group comparison studies standards. The group comparison quality
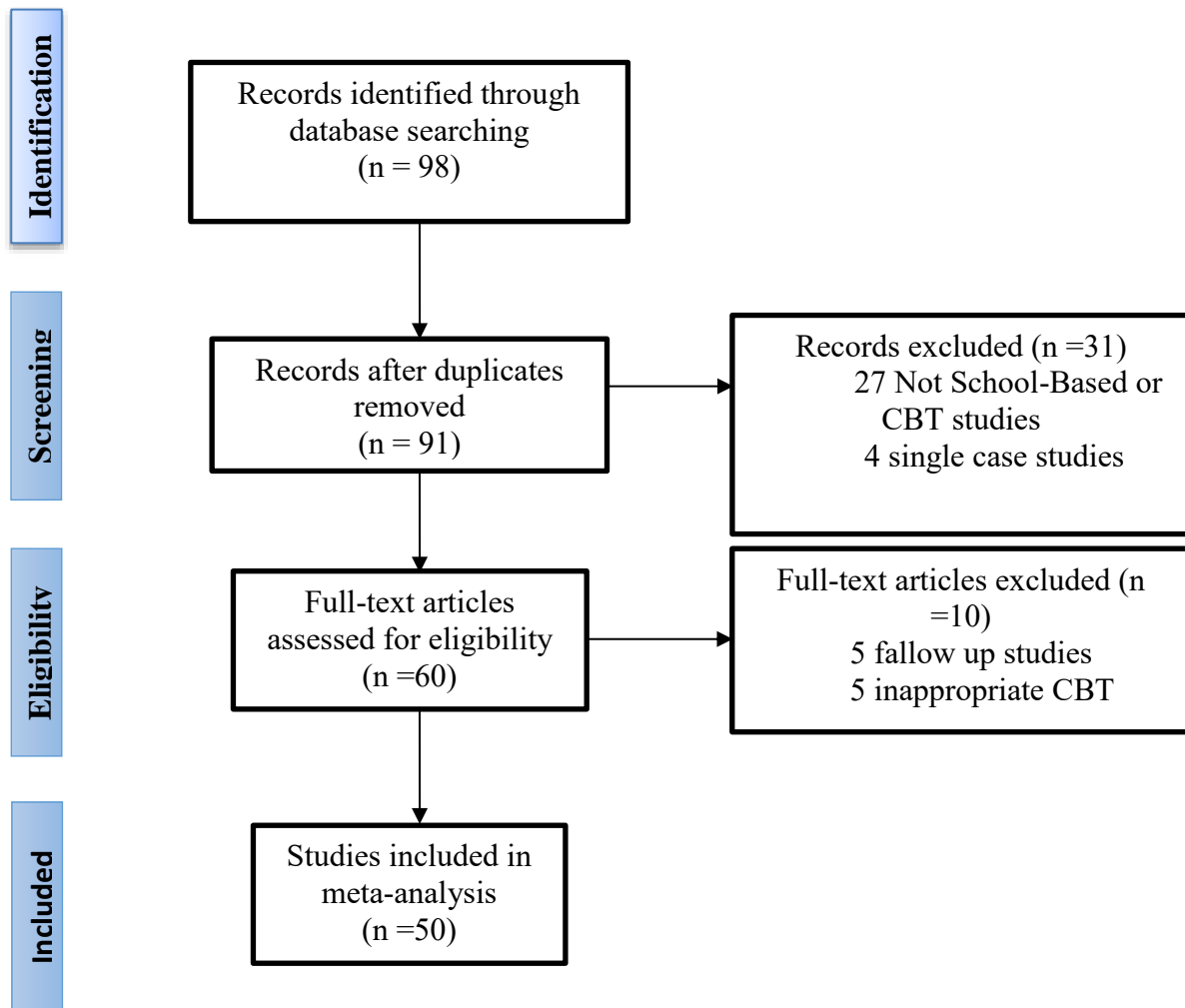
Figure 1. Flow diagram of study selection.

indicators for CEC include: 1) context and setting, 2) intervention agent, 3) description of practices, and 4) implementation fidelity, 6) internal validity, 7) outcome measures, and 8) data analysis. The rubric includes 24 quality components across eight quality indicators categories with further definitions of each component. Table 1 provides the operational definition for each element of the quality indicators across the methodological categories.

Identification of Studies that Met Acceptable Quality Standards

CEC quality standards are designed to be coded dichotomously, either yes or no. Coding the component as a "yes" reflects that the quality indicators' components meet the minimal standards for the quality indicator criteria of CEC standards. If the quality indicators' component is coded as a "no", the component would be evaluated as not meeting the minimal standards of quality indicators. According to the CEC (2005), all indicators must meet the minimum standard to be considered a high-quality study. Given this, if any study has one or more indicators that are coded as a "no", they will be not considered to have met the established criteria of a quality research study.

Interrater Agreement (IRA)

Interrater Reliability Agreement (IRA) is calculated for ratings of the coding quality indicators by using the specific coding definitions shown in Table 1. Each study was coded independently by two doctoral students in special education, and the results were then placed in an Excel spreadsheet, IRA was calculated on 30% (n = 15) of the studies in the total population, and the studies chosen were randomly selected. The formula used for inter-coder agreement was the sum of agreement/total number of agreements + disagreements × 100 (House, House, & Campbell, 1981). Inter-coder agreement for study characteristics was 95%.

<center>**Results**</center>

Characteristics of Included Studies

The literature search returned with 50 studies that met with the inclusion criteria. All 50 studies included CBT treatment for children with or at risk of internalizing problems. These studies included participants from preschool to middle school across the different locations of the world. The total participants were 12,985, and total number of females was 5,835. The participants ranged in age from 4-18. The sample sizes of the studies varied between 6 and 1,439. All studies reported at least one or more types of internalizing problems. All 50 studies were randomized controlled trial designs. The studies involved a least one direct measure of the children' internalizing problems, and all studies focused primarily on decreasing children internalizing problems. Treatment modalities of the studies were between 4 and 16 weeks with 30- to 90-minute sessions (See the Table 1 for study and participant characteristics).

Quality of Research Evaluation

Results were analyzed regarding the primary research question. Twenty-four components of eight quality indicators for each study were coded with this study's rubric that was modified from CEC quality standards. Results of each quality indicators coding are presented in a detail below.

Quality indicator 1.0: Content and setting. The description of the context and settings was evaluated by reviewing the introduction and method sections of the articles that provided descriptions of the critical features of the settings. All 50 studies provided accurate information regarding the critical information of content and settings. Overall, all of studies provided adequate descriptions of the context and settings with geographic location and community

<center>25</center>

setting. Of the 50 studies, 90% (n = 45) of the studies reported geographic location, physical layout and types of the schools. Only 10% (n = 4) of the studies provided the school names instead of the location information (See the Table 2).

Quality indicator 2.0: Participants. To test the quality the description of the participants, the appropriate information to identify the sample characteristics including demographic information, and disability or risk status of each participant differently was evaluated. All studies provided sufficient information related to participant demographics such as gender, age, and grade appropriately. Some studies (Lock & Barrett, 2003; Sheffield et al., 2006; Stakkard et al., 2007) included more than one control or experimental groups. However, although they provided participant demographics information of all participants, they did not provide specific information within the subgroups. Fifteen of the studies provided a table for the demographics variables of the participants and their families (e.g., Barrett, Moore, & Sonderegger, 2000; Barrett, Sonderegger, & Sonderegger, 2001; Cardemil, Reivich, & Seligman, 2002). The main missing component in these studies was a description of the socioeconomic status of participants. Only 10% of the (n = 5) studies provided sufficient information related to children's socioeconomic status. Most of the studies (n = 30) did not describe either the disability or risks of the participants properly. Overall, 40% (n = 20) of the studies provided sufficient information related to sample characteristics, process of selection and critical features of the participants, and they met the minimum requirements of quality indicators in this methodological category (See the Table 2).

Quality indicators 3.0: Intervention agent. Next, documentation of the intervention in the third methodological category was considered. Specifically, studies were evaluated on two

dimensions: 1) sufficient describing the role of the intervention agent as a teacher, researchers, and 2) the adequacy of information of the training related to the implementation of the intervention. Overall, 76% (n = 38) of the studies in this methodological category met all components of the quality indicator.

For the first dimension, most studies (n = 46) studies demonstrated accurate information related to the treatment procedure. They provided separately the role of the intervention agents. They explained the CBT program and components of the interventions in detail describing the role of each participant not only during the intervention but also during the transition process. Some studies (Barrett et al., 2003; Cardemil et al., 2002) only included general information about the intervention and referred to a website for further details. Of those studies reviewed, 24% (n = 12) studies did not did not provide enough information regarding the specific training; however, they provided qualifications required to implement the intervention. Some studies did not provide either information related to the procedure of the treatment or specific training requirements (Cardemil, Reivich, & Seligman, 2002; Dobson et al., 2010; Lock & Barrett, 2003; O'Kearney et al., 2005). However, Moster and Loxton (2008) and O'Kearney et al. (2009) provided general information related to intervention, but they did not include the role of each participant or the specific training requirements to implement the interventions (See the Table 2).

Quality indicators 4.0: Description of practice. The description of practice was evaluated by reviewing details related to critical features of the intervention procedure and the actions of intervention agents. Quality components were coded yes, if the studies provided adequate intervention procedure information and an adequate description of the materials in the practice and no if they did not.

Of the studies, 90% (n = 48) met minimum requirements of the current category and provided sufficient information related to intervention procedure and stages clearly. Two studies (Cardemil et al., 2002; Lock & Barrett, 2003) did not provide either adequate procedure information or an adequate description of the materials (See Table 2).

Quality indicators 5.0: Implementation fidelity. Implementation fidelities of the studies were coded for this category. Specifically, three main components of the implementation fidelity were examined in detail to assess implementation fidelity related: 1) to adherence to using direct reliable measures, 2) to dosage or exposure using direct, reliable measures, and 3) to assessing and reporting fidelity regularly throughout implementation of the intervention. Overall, 34% of the reviewed studies (n = 18) studies met the minimum criteria to establish all components of implementation fidelity. Most studies (n = 32) lacked information on fidelity (See Table 2).

Quality indicators 6.0: Internal validity. To receive credit for the internal validity quality indicator, studies had to meet 6 components, which were: 1) the researcher should control and systematically manipulate the independent variable, 2) the study should describe baseline or control/comparison conditions, such as the curriculum, instruction, and interventions, 3) control/comparison-condition or baseline-condition participants should have either no or extremely limited access to the treatment intervention, 4) the study should clearly describe assignment to groups, which involves participants, 5) overall attrition should be low across groups, and 6) differential attritions should be controlled for by adjusting for non-completers.

Overall, 84% (n = 42) of studies met minimum requirements of the quality indicators. Forth-nine of the reviewed studies' designs were randomized controlled designs, and participants were assigned to the groups randomly. Only Stallard et al. (2005) did not provide a clear

description of the assignment to groups. Thirty-four of the studies used a waitlist, and 15 of the 50 studies included usual groups as control groups. The studies described control group conditions clearly with a specific time and settings. The shortest treatment time was 5 weeks in Calear et al. (2009), and the longest treatment time was in Chiu et al. (2013) with 16 weeks. In all the studies, control groups did not receive treatment during the intervention. All studies controlled independent variables systematically to examine the effects on dependent variables. Overall, attrition was lower than 20% across the groups, and differential attrition was lower than 10% across between groups for most of the studies (n = 42). Eight of the 50 studies showed a high differential attrition level, and the overall attrition of 6 of these studies was high across the groups (See Table 2).

Quality indicators 7.0: Outcome measures/dependent variables. Six different components of this quality indicators category were coded. They were: 1) social importance of outcomes, 2) clearly defines and describes the dependent variables, 3) reporting the effect of the intervention on all measures of the outcome, 4) appropriate frequency and timing of outcomes measures, 5) adequate internal reliability inter-observer reliability, test-retest reliability, or parallel-form reliability, as relevant, and 6) adequate evidence of validity.

Overall, 86% (n = 43) met all quality components of this category. All reviewed studies provided adequate documentation to demonstrate socially important outcomes. All reviewed studies in current meta-analysis clearly defined and described the measurement of the dependent variables. All studies included least one measurement of the internalizing problems, and they reported the effects of the intervention on all measures of the outcome. However, 7 of the 50 studies included measurements with reliability and validity, but they did not put this information in the studies (See the Table 2).

Quality indicators 8.0: Data analysis. The quality indicator of data analysis was coded yes if the data analysis indicators were appropriate for comparing a change in performance of two or more groups, and if the study reported one or more than one appropriate effect size. The quality indicator was coded no if the data analysis indicators were not appropriate.

Data analyses of the studies were acceptable across 96% (n = 48) of the studies. All studies demonstrated the changes in performance with using a table to show the means and standard deviations of each measure at pre- and post-treatment for treatment or control conditions. Nine studies used ANCOVAs/MANCOVAs, and 31 studies used one-way ANOVAs/MANOVAs techniques to performance of two groups. Another 8 studies used different types of techniques such as McNemar's test, mediation analysis, or hierarchical linear modeling. Cooley et al., 2004; Horowitz et al., 2007: Merry et al., 2004; Muris et al; 2008). Only two studies did not provide appropriate information related to the analysis procedure; however, they reported more than one appropriate effect size statistic (Manassis et al., 2010; Muris et al., 2008; See the Table 2).

Discussion

The literature indicates that CBTs were used as evidence-based practices for a variety types of internalizing problems in clinical settings. With the transfer of CBTs from clinical to school settings, most researchers modified both the process and content of the CBT programs to adapt them to the school settings. These variations and modifications in the CBTs need to be tested and be shown to be effective and reliable in reducing internalizing problems in children. Therefore, this current study was conducted to apply the CEC (2014) research quality criteria to

evaluate the quality of school-based CBT treatments to treat a broad range of internalizing problems within in the MTSS.

Fifty group comparison research studies were included in the final review, and 24 quality components across eight quality indicator categories were coded and analyzed for each study. Overall, results of review demonstrated that most studies did not meet CEC (2014) research quality criteria to be considered as evidence based. Only 4 of the 50 studies met all components of the quality indicators. Most studies lacked only one quality indicator across the eight quality indicators. Eight studies missed three or more quality indicators (Barrett et al; 2001; Barrett et al., 2003; Barrett & Turner, 2001; Chaplin et al., 2006; Cutuli et al. 2013; Hunt et al., 2009; O'Kearney et al., 2005; O'Kearney et al., 2009).

Overall, all studies provided accurate information related to content, settings and descriptions of participants. Gersten et al. (2005) pointed out that an accurate definition of the participant in studies help a reader to determine which findings can be generalized for specific populations of the participants. A fundamental issue related to content, settings and descriptions of participants was that a description of disability or risk status of participants was missing. Hofman et al.'s (2012) findings also demonstrated that many studies were missing essential information of the samples (Hofman et al., 2012). This review of the studies showed that most studies that implemented universal level interventions were likely to lack a description of the disability or risk status of participants. Especially in special education, due to different types of disabilities, the types of the disability or risk status of participants should be included to determine the appropriate evidence-based practices for specific population of the participants. Therefore, the lack of a description of the disability or risk status of the participants may cause significant problems for generalizing the results of reviewed studies to address whether the

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participants possessed the difficulties addressed and whether the interventions were appropriate (Gersten et al., 2005; Hofman et al., 2012).

Most studies included a broad description of the interventions but were missing a description of the training. Accurate information about the intervention provided helps readers to have ability to administer the intervention outside of the studied context in their own specific settings (Gersten et al., 2005). Because of this missing information, studies did not include accurate information related to the implementation of the intervention. Moreover, many studies demonstrated that implementation fidelity was still problematic as a study limitation. When adopting or modifying CBTs in school settings, it is critical that school-based CBTs should be delivered with fundamental core elements of a program with the appropriate monitoring of practices. Therefore, implantation fidelity is critical because this information helps to determine the relationship between the independent and dependent variables (Wheeler et al., 2006). The results of the review showed that measuring of implementation fidelity remains problematic and should be addressed to demonstrate the effects of school-based CBTs for children with or at risk of existing internalizing problems. Therefore, the lack of implementation fidelity limits the confidence in the results of a study and causes the existence of non-effective results on reducing internalizing problems of children in school settings.

According to this evaluation, most studies met internal validity quality indicators. Demonstrating the internal validity in qualitative research is vital to show the sense of the study's findings (Miles & Huberman, 1994). All studies were geared to show the sense of their findings by providing accurate internal validities. All studies assigned participants to groups randomly, and all procedures of the baseline and intervention were explained and applied correctly with systematically manipulations. Using multiple measurements yields better

information related to the impact of the intervention than using a sole measure and using tests without demonstrating validity can weaken the power of a study (Gersten et al., 2005). Therefore, descriptions of measures should include clear definitions with evidence of reliability and validity (Bottge et al., 2002). The primary finding of this current study demonstrated that most of studies in current review used more than one measurement with adequate reliability and validity to evaluate outcomes.

Limitations

The results of the present study should be considered considering several limitations. The first and biggest limitation of this study was the inclusion of limited quality criteria. The study included the eight quality criteria of CEC. With a limited number of criteria, identifying the quality of the school-based CBT studies may be problematic because of the application of a variety of CBTs with different lengths. Future studies should include more quality indicators looking at the different types of CBT treatments more specifically. The setting of the studies was another limitation of current study. In a school setting, applying some of the quality indicators can be problematic or can be missed. Unclear parameters of targeted outcomes is another limitation. Target outcomes of the studies were internalizing problems of children in school settings. All studies in this review examined the effects of CBT intervention on school-age children' internalizing outcomes without measuring educational outcomes. Future research should pay attention to issues such as treatment integrity, operational definitions of participants and the implementation of intervention. New guidelines can be developed for testing and using valid and reliable measures of outcomes.

CHAPTER III

THE EFFECTS OF THE SCHOOL-BASED COGNITIVE BEHAVIORAL

INTERVENTIONS FOR INTERNALIZING PROBLEMS: A META-ANALYSIS

The internalizing behaviors are defined as an over control of emotions and behaviors that are directed inwardly at the individual and include disorders such as anxiety, depression, social withdrawal, and self-thoughts (Achenbach & Edelbrock, 1978; Merrell & Gueldner, 2010). Most internalizing behaviors are related to anxiety and depression disorders, and the prevalence of anxiety and depression disorders have been found to range from 2% to 27% of children and adolescents (Costello et al., 2003). Costello (2004) estimated that 5% to 19% of children and youth meet the symptoms of anxiety and demonstrated that the anxiety is one of the problems most concerning teachers and parents nationwide. The second largest group of internalizing problems is depression, and the existing literature demonstrated that up to 2.8% of children and 8% of adolescents experience some types of depression in their entire life (Collins et al., 2004).

Even though internalizing behaviors are one of the main reasons for children and youth to be to be referred mental health services, a significant lack of identification of children with the internalizing problems exists. Most children with internalizing problems are undiagnosed during their entire lives because of difficulties in observing internalizing behaviors (Gresham & Kern, 2004). Moreover, Rapee et al. (2009) found that, although a significant number of children are likely to lose their anxiety disorder over time without treatment, a significant proportion of children are also likely to continue with an anxiety disorder for many years into adulthood, which causes other mental health problems such as depression-related disorders (Rapee et al., 2009).

Current studies show that 1 in 5 children in a classroom is at risk of developing one of the types of anxiety disorders (Boyd et al., 2000), and previous studies have shown that 2% to 27% of school-age children in the United States meet diagnosis criteria for an anxiety disorder or depression disorders (Costello et al., 2003). Children with any internalizing problems that are untreated causes severe mental health, academic and social problems in school settings (Ginsburg et al. 2008; Sareen et al., 2005). For instance, Ialonge et al. (1994) demonstrated that children with anxiety disorders were 7.7 times more likely to be in the lowest quartile of math achievement than their same age peers. Therefore, these children are at high risk of school refusal, poor academic performance and functional impairments in social domains (Bittner et al., 2007). Given these significant potential risks of childhood internalizing problems, the development and determination of effective interventions for internalizing problems and implementing intervention programs as early as possible is an important health priority (Gilham et al., 2012).

Behavioral Therapies or Interventions (CBTs) are well-established evidence-based practices and include cognitive restructuring, copings skills therapies, and problem-solving therapies to treat internalizing problems in children (Walkup et al., 2008), and CBTs have emerged as a primary treatment approach with strong efficacy and effectiveness (Barrett et al., 1998). Previous studies have demonstrated the effectiveness of the CBTs for the emotional, behavioral and social needs of children (Kazdin & Weisz, 2000). Kendall (1994) and Barett, Dadds, and Rapee (1998) demonstrated that internalizing problems such as anxiety or depression can be minimized or treated with the individual or group formats of CBTs (Barrett & Turner, 2001; Curry, 2001). For instance, Hilt-Panahon et al. (2007) demonstrated results of school-based intervention for students with or at risk for depression. Their review of the literature

showed that 11 of 15 studies they examined used school-based CBTs for reducing children's

depressive symptoms, and the results showed that school-based CBTs were one of the most

effective evidence-based treatment methods for preventing and decreasing the symptoms of

depression.

Recently, researchers have also agreed that schools are the best environment in which to

provide mental health care for children (Strein, Hoagwood, & Cohn, 2003) and that schools are a

unique place for the promotion of prevention and early intervention programs (Masia-Warner et

al., 2006). Masia et al. (2001) stated that school is the children's natural environment and

treatment in children's natural environment will provide an optimal opportunity for a meaningful

decrease in problems because teachers may know which skills or methods are needed for

students (Miller et al., 2010). Unfortunately, most children who experience internalizing

behaviors are unable to identify these problems and do not receive clinical interventions although

there are a variety of services that can be provided through agencies or private practices

(Gresham & Kern, 2004). Previous data demonstrated that only 25% and 34% of children with

diagnosed psychological disorders received mental health care (Donovan & Spence, 2000). In

children without a diagnosis, the number of students without mental health service exceeds 50%

(Zubrick et al. 1997). Moreover, studies have demonstrated that students with internalizing

behaviors are more likely to be overlooked and underserved in a school setting by educators until

their actions are linked to the number of severe internalizing problems. That is because their

behaviors do not disrupt the classroom, and these students are likely to be quiet without a

problem (Merrell & Gueldner, 2010). Therefore, Multi-Tiered Systems of Supports (MTSS) are

developed for delivering school-based practices for meeting the academic and behavioral needs

of students before the existence of problems becomes apparent (Bradley, Danielson, & Doolittle, 2007).

MTSS includes a multi-tiered approach to help students based on their levels of need (Gresham, 2002). At the first tier of the MTSS, the primary goal is to provide preventative school-wide services to all children to determine the needs of students (Bradley, Danielson, & Doolittle, 2007). Universal programs serve all students at Tier I without looking for any symptoms of anxiety (Barrett & Turner, 2001), and these programs aim to reduce the incidence of anxiety before the existence of problems is noted. Universal interventions are successful in meeting 80% to 85% of all students' needs.

Tier II interventions are designed to provide additional assistance to students to display appropriate and desirable behaviors and academic achievement with more intense intervention within a 6 to 12-week period (Manassis et al., 2010). The total population of Tier II students are estimated to be around 5% to 15% of the school population, and only 1% to 5% of these students need more specific intervention, which is called as a Tier III.

Tier III indicates programs that focus on children with symptoms of disorders and aim to treat these children with more individualized, long-term and frequent programs (Chiu et al., 2013).

Previous studies tested the effectiveness of a universal CBT interventions for preventing anxiety and depression symptoms within the different levels of MTSS (Lowry-Webster et al., 2001; Barrett et al., 2005; Chaplin et al., 2006; Tomba et al., 2010). Lowry-Webster et al. (2001) conducted a randomized clinical trial of the universal CBT study with 594 children aged 10 to 13 years old. Children were randomly assigned to a ten-week family group CBT (FRIENDS), and the trial included a treatment and a control group. The program was implemented as a part of the

school curriculum by a teacher or school counselor. Participants completed self-report measures of Spence Children's Anxiety Scale (SCAS), the Revised Children's Manifest Anxiety Scale (RCMAS), and the Children's Depression Inventory (CDI; Kovacs, 1981). Results demonstrated that all students in the intervention condition reported a significant decrease in anxiety and depression levels at post-test. Moreover, the results showed 75.3% of the children previously identified as being in an at-risk group were no longer at risk at the follow-up. Barrett et al. (2005) also demonstrated similar effects with 693 children aged between 9 and 10, and youth aged between 14 and 16 years old. Barrett (2004, 2005) studied The Friends for Life Program that was applied by mental health professionals in a school setting during 12 weekly 45-60-minute sessions. Students both in a school-based cognitive-behavioral intervention and in a control group completed the Spence Child Anxiety Scale (SCAS; Spence, 1998). Overall, the findings determined that FRIENDS program was potentially useful in reducing anxiety symptoms within the school system at the post-test (F (2,437) = 6.46, p < .05, η2 = 12.33) and at the 12-month follow-up. Moreover, Barrett and his colleagues found that primary school children showed more reduction in anxiety symptoms than adolescents.

Recently, controlled trials have also demonstrated substantial empirical support for the effectiveness of school-based CBT interventions as an intensive intervention at second level of MTSS for students with internalizing problems. (Masia-Warner et al., 2004; Manassis et al., 2010). Masia-Warner et al. (2004) tested the effects of a 12-week CBT program (Skills for Social and Academic Success, SASS) for troubled adolescents (n = 35, aged 14-18 years) in a randomized controlled trial (RCT). Participants were randomized to a SASS intervention group (n = 18) or to a control group (n=17). The assessment for this study included independent evaluator ratings, the Anxiety Disorders Interview Schedule for DSM-IV, the Parent and Child

Version (ADIS-PC), self-reports ratings, the Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel et al., 1995), the Social Anxiety Scale for Adolescents (SAS-A; LaGreca, 1998), and the parent report Social Anxiety Scale for Adolescents: Parent Version (SAS-AP; LaGreca, 1998). Results at post-treatment indicated that intervention groups demonstrated a significant reduction in social anxiety compared to the wait-list group based (F (1, 33) = 50.6, p < .0001). The effects of the intervention were also maintained nine months after treatment.

Gilham et al. (2005) also evaluated The Penn Resiliency Program (PRP) with 32 children. The Penn Resiliency Program (PRP) is a well-studied treatment for elementary and middle school students (Seligman et al., 2009). In Gilham et al.'s (2005) study, 44 participants were randomly assigned either to the PRP or a control group during the eight sessions. Intervention effects were evaluated at the post-treatment and at 6-month and 12-month follow-up periods. The results showed, however, that students in the PRP condition did not exhibit a significance decrease in the level of depression at post-treatment, the PRP significantly reduced depressive symptoms at the 6- and 12-month follow up periods. Moreover, only two students in the intervention group (10%) showed a high level of anxiety symptoms after the intervention.

The effects of CBT within Tier III are also documented (Flannery-Schroeder, Choudhury, & Kendall, 2005; Beidel, Turner, & Morris, 2000). Ginsburg et al.'s (2012) study involved 32 children with a clinical diagnosis of anxiety between the ages of 8 and 12. The modular-formed base CBT was adapted from CBT manuals (Kendall 1990; Silverman et al., 1999a). The CBT protocol was utilized and included 10 weekly meetings for 10 weeks. Treatment sessions were applied in the school counselor's office during the school day within the individual format. Results indicated no significant differences between groups of the children in CBT compared to children in unusual care group. The results showed that 42% of the children in CBT no longer

met diagnostic criteria at post-treatment, compared to the control group in which 57% of participants improved.

Masia et al. (2005) also evaluated both individual and group CBT for anxiety disorder in targeted children. Thirty-five children (aged 8 to 14 years) who met DSM-IV criteria for Generalized Anxiety Disorder (GAD), Separation Anxiety Disorder (SAD), and/or Social Phobia (SP) participated and were randomly assigned to the 14-session group intervention, the Skills for Academic and Social Success (SASS), or a waitlist control (WLC) condition. Social Phobic Disorders Severity and Change Form (Heimberg et al., 1998; Liebowitz et al., 1992), the Liebowitz Social Anxiety Scale for Children and Adolescents (LSAS-CA) (Masia et al., 1999), and the Social Phobia and Anxiety Inventory for Children (SPAI-C) (Beidel et al., 1995) were provided to measure fears and anxieties in children. The post-intervention and 9-months results demonstrated a significant decrease in the level of anxiety. At the end of the 9-months follow-up, 67% of SASS children no longer met the criteria for a clinical anxiety disorder.

To date, systematic reviews have examined the efficacy and effectiveness of some types of internalizing problems for children and adolescents in a school environment. One systematic review considered the efficacy of school-based CBT interventions to decrease the anxiety level of school-age children in Australia. Nehmy (2010) reviewed nine published Australian school-based anxiety prevention interventions. The results found that only two of nine studies showed significant prevention effects on the reduction the anxiety level of children. Neil and Christensen (2009) also identified and described all school-based prevention and early intervention programs for reducing the symptoms of anxiety. Twenty individual school-based CBTs were explained across universal, selective and indicated prevention program categories. The results of the review found a significant reduction in symptoms of anxiety. Small ($d = 0.11$)

to large ($d = 1.37$) effects sizes were reported in Neil and Christensen's (2009) review study. Hil-Panahan et al. (2007) also examined the effects of school-based on depression within systematic reviews with 15 CBTs. A total of 2,652 students aged 6 to 17 years across 15 studies participated in school settings. Eleven of the 15 studies used CBT, and the effects of using CBT ranged from moderate to large. Only two studies resulted in low effectiveness.

Neither a review nor a meta-analysis has examined the efficacy of school-based CBT for internalizing problems at the MTSS. Recently, Matthew et al. (2012) reviewed the effectiveness of school-based cognitive behavioral interventions for anxious and depressed youth with a meta-analysis. They included 63 studies with 8,225 school-aged participants in experimental groups and 6,986 in control groups. The results demonstrated that CBT was moderately effective for decreasing the level of anxiety ($g = 0.50$) and had mild effects on reducing depression symptoms of children in school settings.

The primary purpose of the meta-analysis in this current study was to demonstrate the effectiveness of the school-based CBTs in reducing internalizing problems of school-age children within the MTSS. The second aim of this meta-analysis was to determine possible moderators of the CBT treatments. Three levels of intervention at MTSS, the types of implementers, and the types of internalizing problems will be evaluated as potential moderators of school-based CBT response among children with internalizing problems.

Method

A systematic review and meta-analysis protocol was developed from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher, Liberati, Tetzlaff, & Altman, 2009).

Study Identification

Search method. Potential studies were identified through electronic searches. To address the research question, the electronic databases of *pyscINFO, Eric, ProQuest, Google Scholar,* and *Refworks* were searched for studies. The literature search included peer-reviewed and unpublished studies that contained one of the following keywords: "*internalizing* problems*"* *"anxiety disorder,"* *"depression,"* *"behavioral intervention,"* *"school-based cognitive behavioral therapy-intervention,"* *"cognitive behavioral therapy-intervention,"* and *"CBT*." This current meta-analysis does not include a specific period because of the limited number of publications. The abstracts of each study were reviewed, and acceptable studies were selected based on inclusion criteria.

Inclusion criteria. Studies were included in the current meta-analysis if they met the following inclusion criteria: 1) the study must be published in a peer-reviewed journal or in a thesis format; 2) the study must be published in English; 3) study must involve participants with a primary diagnosis of at least one type of internalizing problems or at risk to develop internalizing problems; 4) the study must include participants aged 18 years or younger; 5) the study must report the number of subjects falling above the clinical cutoff for least one standardized measures of anxiety, 6) the study must involve groups design research, and 7) the study must have participants receiving school-based CBT with a treatment and comparison

groups in a school setting. The studies that miss any of these inclusion criteria will be excluded from the current review. Case studies and qualitative case reports will not be used in this meta-analysis. See Figure 1 for a flowchart diagram of the selection.

Extraction of Descriptive information

Each study was coded independently by the first author and a doctoral student utilizing the following particulars: 1) sample size, 2) gender, 3) age of the participant, 4) types of program, 5) levels of intervention at MTSS, 6) treatment modality, 7) types of the internalizing problems, 8) types of implementations, and 9) outcome measures. Potential moderators were also coded for each study including: 1) the level of intervention at Multi-Tiered Systems of Supports (MTSS), 2) types of implementation, and 3) types of internalizing problems. See Table 1 for the characteristics of the included studies.

Level of intervention at MTSS. Although many types of MTSS exist in school settings, most programs are based on three-tier models, which include universal, selective and targeted interventions (Bradley, Danielson, & Doolittle, 2007). The universal intervention is coded as a Tier I, selective intervention is coded as a Tier II, and targeted intervention is coded as Tier III.

Types of the implementer. For this meta-analysis, two different groups will be created to demonstrate the possible effects of leaders on treatment response. Studies will be classified as: 1) mental health administrator group, if leaders are a psychologist or nurse or 2) teacher administrator group, if the leaders are teachers or school members.

Types of the internalizing problems. The types of disorders will be divided into two different levels: 1) anxiety-related disorders and 2) depression-related disorders.

Variable Coding and Coding Reliability

Each study was coded independently by two doctoral students, and the results placed in an Excel spreadsheet for the following information: study author, sample size, gender, age of the participants, name of the program, level of the program at MTSS, treatment modality, types of internalizing problems, implementer, and dependent variable (See Table 1 for the characteristics of the included studies). Inter-coder reliability was calculated for 30% of the study (n = 15). The formula used for inter-coder agreement was the sum of agreement/total number of agreements + disagreements × 100 (House, House, & Campbell, 1981). Inter-coder agreement for study characteristics was 90%.

Calculation of Effect Size and Meta-Analytic Procedures

In this current study, due to using several different scales, Cohen's *d* was calculated with the raw scores of each study with using available data by means of the subtraction of the mean score of the control group from the average score of the experimental group at post-test and by dividing the result by the pooled standard deviation of both experimental and control groups (Cohen, 1988). All studies used more than one scale. Therefore, the ESs were combined and averaged for each study. In studies that had more than one scale, the effects size of each measure was calculated, and then combined and averaged. In cases in which studies included more than one experimental and control group, ES was calculated per the subsample within a study, and, in studies in which a comparison group was absent, mean change scores between pre-treatment and post-treatment was used to determine effect sizes.

For the current meta-analysis, the possible standard error of effects size is of critical importance (Lipsey & Wilson, 2001). Therefore, all the effects sizes of all studies were converted from Cohen's *d* to Hedge's *g*, and a 95% confidence interval was calculated for

minimizing the biases due to small sample sizes. The only differences between the two measures is that Hedges' *g* uses *N*-1 for a sample instead of using *N*, which provides better estimates (Grissom & Kim 2005). For converting Cohen's *d* to Hedges's *g*, Wilson's ES calculators based on formulas that Lipsey and Wilson provided was used (2001). Then, the weighted effects size was calculated to demonstrate the effectiveness of the studies. Hedges' *g* 0.5 indicates a small effect size, Hedges' *g* = 0.5–0.8 indicates moderate effect size and Hedges' *g* 0.8 indicates a large effect size (Cohen, 1988). Inverse variance weights were used to weigh each study. The weighted mean estimate of the effect sizes was calculated with Hedges' *g* to demonstrate the overall effectiveness of 50 studies. Inverse variance weights will be used to weigh each study rather than the sample size because the inverse variance weights provide more reliable information by considering both the total population and sample size in each group (Borenstein, Hedges, & Rothstein, 2009). Thus, more weight is given to studies that are more precise (Borenstein, Hedges, & Rothstein, 2009).

Publication bias. Publication bias refers to a selection of studies based on their positive results. A funnel plot of sample sizes by differences in mean was created to use visual analysis to determine possible publication bias. Because funnel plots of standard error versus the standard differences in means may lead to false results, sample sizes by differences in mean were used to determine publication bias (Zwetsloot et al., 2017).

Random-Effects Model and Moderator Analyses

Fixed effect model vs random effects. The fixed effect model assumes that one true effect size is present in all studies (Hedges & Vevea, 1998). By contrast, the random effects model assumption is that the true effect size is not identical for all studies and varies from study to study (Hedges & Vevea, 1998). The primary purpose of the random effects model is to

estimate the main effects within a range of studies without ignoring the information from the smaller studies (Hedges, 1994). Because studies in educational research have significance differences such as types of the interventions, the settings and age ranges, etc., the true effect size may vary from study to study. Therefore, studies would differ on their study characteristics, which will result in a variety of true effects sizes. Thus, for analyzing overall data of the current study, the random-effects model will be utilized.

Moderator analysis. As indicator of heterogeneity, Cochran's Q-statistic and forest plots will be used in this current meta-analysis (Cochran, 1954). The significance of the Q-statistic will be determined by using a chi-squared distribution with k-1 degrees of freedom in which k represents the number of the studies. Cochran's Q will be calculated within subgroups and across subgroups with using fixed effect model. If the results of the Q-statistics are significant, possible moderators will be categorized and analyzed between and within the moderator categories. A forest plot will be used for illustrating the relative strength of treatment effects with presenting their 95% CI, and, for determining of the publication bias, a funnel plot will be used (Sterne & Egger, 2001). The statistical I^2 is also used to demonstrate the percentage of heterogeneity within in the current study (Higgins & Thompson, 2000). For a visual demonstration of heterogeneity, forest plots were used (Moher et al., 2009).

Results

Participant Characteristics

Fifty studies were examined in this meta-analysis representing a total of 12,985 participants. There were 6,225 participants in the control groups and 6,760 participants in the

treatment groups. Participants ranged in age from 4 to 18 years old and were from distinct locations across the world within the different settings. Only one study involved children younger than 7 years old (Pahl & Barrett, 2010), and two studies involved children older than 17 years old (Muris et al, 2001; Stice et al., 2008). The sizes of the studies varied between 6 participants and 1,439 participants. Of the participants, 5,835 were female (45%) and 7,150 were male (55%).

The design of each study was also coded. All studies utilized a group design. More specifically, all studies were randomized controlled trials comparing CBTs to waitlists, 34 studies were randomized controlled trials comparing CBTs to usual care groups, and 16 were randomized controlled trials comparing CBTs to delayed treatment groups. See Table 1 for the characteristics of the included studies.

Overall Effects

The ranges of ES estimates of the 50 studies were between (g) -1.61 to 0.21. Seven studies included more than one treatment group and control group (Barrett et al., 2005; Barrett & Turner, 2001; Cardemil, Reivich & Seligman 2002; Sheffield et al., 2006; Shocet et al., 2010; Spence et al., 2003). Therefore, these studies included two or more separate effects sizes. The overall effect size of using of school-based CBT for anxiety across the 50 studies was small, $g = -0.25$, 95% CI [-0.31, -0.19], $z = -8.10$, $p < .05$ (See Figure 2 for effects sizes and confidence intervals across all of the studies at 95% CI.) with significant heterogeneity, $Q (57) = 129.67$, $p < 0.05$, $I^2 = 56.04$ %. See Table 3 for the mixed method results.

Publication Bias

Visual inspection of the funnel plot was used to identify outliers, and no study was determined to be an outlier. Publication bias was also assessed using a funnel plot, and no

significant evidence was found for publication bias. See Figure 3 for the funnel plots of the

included studies.

Study (Year)	Hedges' g	LL	UL	Hedges' g and 95% CI
Masia et al (2001)	-1.49	-2.69	-0.28	
Masia et al. (2004)	-1.27	-1.98	-0.56	
Cooley et al. (2004)	-1.18	-2.09	-0.26	
Warner et al. (2007	-1.19	-1.93	-0.45	
Cardemil et al. (2002)	-1.10	-1.95	-0.24	
Chiu et al. (2013)	-1.06	-1.71	-0.41	
Barrett et al. (2000)	-0.88	-1.85	0.08	
Barrett et al. (2001)	-0.79	-1.08	-0.50	
Barrett et al. (2003)	-0.57	-0.94	-0.19	
Muris et al. (2008)	-0.51	-0.93	-0.08	
Kowalenko et al. (2005)	-0.50	-0.93	-0.06	
Hunt et al. (2009)	-0.50	-0.76	-0.24	
Dobson et al. (2010)	-0.48	-1.04	0.07	
Stice et al. (2008)	-0.47	-0.77	-0.17	
Ginsburg & Drake (2002)	-0.43	-1.49	0.63	
Jaycox et al. (1994)	-0.42	-0.78	-0.06	
Stallard et al. (2007)	-0.42	-0.72	-0.12	
Mifsud et al. (2005)	-0.41	-0.82	0.01	
Lowry-Webster et al. (2001)	-0.39	-0.58	-0.19	
Chaplin et al. (2006)	-0.36	-0.83	0.12	
Horowitz et al. (2007)	-0.36	-0.60	-0.12	
Spence et al. (2003)	-0.34	-0.57	-0.11	
Spence et al. (2003)	-0.32	-0.45	-0.19	
Shocet et al. (2010)	-0.31	-0.63	0.01	
Cardemil et al. (2002)	-0.31	-0.70	0.08	
Lock & Barrett (2003)	-0.29	-0.44	-0.14	
Bernstein et al. (2005)	-0.27	-0.89	0.34	
Cardemil et al. (2002)	-0.27	-0.86	0.31	
Barrett & Turner (2001)	-0.27	-0.49	-0.05	
Liddle & Spence (1990)	-0.25	-1.08	0.58	
Muris et al. (2008)	-0.25	-1.18	0.68	
Ginsburg et al. (2011)	-0.24	-0.92	0.44	
Shocet et al. (2001)	-0.22	-0.53	0.09	
Harnett & Dadds (2004)	-0.22	-0.49	0.05	
Stallard et al. (2005)	-0.22	-0.42	-0.02	
O'Kearney et al. (2005)	-0.22	-0.73	0.30	
Aune & Stiles (2009)	-0.21	-0.31	-0.11	
Merry et al. (2004)	-0.20	-0.41	0.01	
Cutuli et al. (2013)	-0.19	-0.37	-0.01	
Calear et al (2009)	-0.17	-0.28	-0.06	
Pahl & Barrett (2010)	-0.17	-0.42	0.08	
Manassis et al. (2010)	-0.15	-0.47	0.17	
McCarty et al. (2013)	-0.14	-0.51	0.23	
Roberts et al. (2003)	-0.12	-0.40	0.17	
Miller et al. (2011)	-0.12	-0.29	0.05	
Sheffield et al. (2006)	-0.10	-0.35	0.15	
Gillham et al. (2006)	-0.08	-0.69	0.53	
Sheffield et al. (2006)	-0.07	-0.32	0.18	
O'Kearney et al. (2009)	-0.06	-0.37	0.26	
Sheffield et al. (2006)	-0.05	-0.30	0.20	
Barrett & Turner (2001)	-0.05	-0.26	0.16	
Mostert & Loxton (2008)	-0.04	-0.61	0.53	
Barrett et al. (2005)	0.06	-0.32	0.44	
Dadds et al. (1997)	0.10	-0.25	0.44	
Barrett et al. (2005)	0.15	-0.08	0.37	
Roberts et al. (2010)	0.17	-0.02	0.36	
Miller et al. (2011)	0.21	-0.17	0.58	
Barrett et al. (2005)	0.21	-0.26	0.67	
Overall ES	**-0.25**	**-0.31**	**-0.19**	

-3.00 -2.50 -2.00 -1.50 -1.00 -0.50 0.00 0.50 1.00 1.50 2.00 2.50 3.00

Figure 9. Forest plot of studies included in the meta-analysis. A horizontal line represents the 95% confidence intervals of each study. Black box represents the effect size of the study. The diamond represents the overall effects across 50 studies. LL = lower limit; UL = upper limit.

Funnel Plot

Figure 10. Funnel plot of included studies.

Potential Moderator Analysis

Potential moderators for this study were levels of the interventions at MTSS, types of the implementers, and types of internalizing problems. The potential moderators were analyzed to address the second purpose of this meta-analysis.

Levels of interventions at MTSS. The universal level intervention (Tier I) included 35 studies. Selective level of intervention (Tier II) included 11 studies, and the targeted level of intervention (Tier III) comprised 12 studies that used CBTs for specific group or individuals. The results of the analyses did not show significant differences across the levels of the interventions

at MTSS. Universal level interventions had smaller effects sizes, $g = -0.22$, 95% CI [-0.28, -

0.15], $z = -6.58$, $p < .05$ than intensive level interventions, $g = -0.32$, 95% CI [-0.50, -0.19], $z = -$

Study	Moderator	Hedges' g	LL	UL
Cardemil et al. (2002)	Universal	-1.10	-1.95	-0.24
Barrett et al. (2000)	Universal	-0.79	-1.08	-0.50
Barrett et al. (2003)	Universal	-0.57	-0.94	-0.19
Hunt et al. (2009)	Universal	-0.50	-0.76	-0.24
Jaycox et al. (1994)	Universal	-0.42	-0.78	-0.06
Stallard et al. (2007)	Universal	-0.42	-0.72	-0.12
Lowry-Webster et al. (2001)	Universal	-0.39	-0.58	-0.19
Chaplin et al. (2006)	Universal	-0.36	-0.83	0.12
Horowitz et al. (2007)	Universal	-0.36	-0.60	-0.12
Spence et al. (2003)	Universal	-0.34	-0.57	-0.11
Spence et al. (2003)	Universal	-0.32	-0.45	-0.19
Shocet et al. (2010)	Universal	-0.31	-0.63	0.01
Cardemil et al. (2002)	Universal	-0.31	-0.70	0.08
Lock & Barrett (2003)	Universal	-0.29	-0.44	-0.14
Cardemil et al. (2002)	Universal	-0.27	-0.86	0.31
Barrett & Turner (2001)	Universal	-0.27	-0.49	-0.05
Shocet et al. (2001)	Universal	-0.22	-0.53	0.09
Harnett & Dadds (2004)	Universal	-0.22	-0.49	0.05
Stallard et al. (2005)	Universal	-0.22	-0.42	-0.02
Aune & Stiles (2009)	Universal	-0.21	-0.31	-0.11
Merry et al. (2004)	Universal	-0.20	-0.41	0.01
Cutuli et al. (2013)	Universal	-0.19	-0.37	-0.01
Calear et al (2009)	Universal	-0.17	-0.28	-0.06
Manassis et al. (2010)	Universal	-0.15	-0.47	0.17
Roberts et al. (2003)	Universal	-0.12	-0.40	0.17
Miller et al. (2011)	Universal	-0.12	-0.29	0.05
Gillham et al. (2006)	Universal	-0.08	-0.69	0.53
Sheffield et al. (2006)	Universal	-0.05	-0.30	0.20
Barrett & Turner (2001)	Universal	-0.05	-0.26	0.16
Mostert & Loxton (2008)	Universal	-0.04	-0.61	0.53
Barrett et al. (2005)	Universal	0.06	-0.32	0.44
Barrett et al. (2005)	Universal	0.15	-0.08	0.37
Roberts et al. (2010)	Universal	0.17	-0.02	0.36
Miller et al. (2011)	Universal	0.21	-0.17	0.58
Barrett et al. (2005)	Universal	0.21	-0.26	0.67
Overall ES for Universal level		-0.22	-0.28	-0.15
Cooley et al. (2004)	Selective	-1.18	-2.09	-0.26
Barrett et al. (2000)	Selective	-0.88	-1.85	0.08
Muris et al. (2008)	Selective	-0.51	-0.93	-0.08
Kowalenko et al. (2005)	Selective	-0.50	-0.93	-0.06
Dobson et al. (2010)	Selective	-0.48	-1.04	0.07
Stice et al. (2008)	Selective	-0.47	-0.77	-0.17
Mifsud et al. (2005)	Selective	-0.41	-0.82	0.01
Bernstein et al. (2005)	Selective	-0.27	-0.89	0.34
McCarty et al. (2013)	Selective	-0.14	-0.51	0.23
Sheffield et al. (2006)	Selective	-0.07	-0.32	0.18
Dadds et al. (1997)	Selective	0.10	-0.25	0.44
Overall ES for Selective Level		-0.32	-0.50	-0.15
Masia et al (2001)	Targeted	-1.49	-2.69	-0.28
Masia et al. (2004)	Targeted	-1.27	-1.98	-0.56
Warner et al. (2007)	Targeted	-1.19	-1.93	-0.45
Chiu et al. (2013)	Targeted	-1.06	-1.71	-0.41
Ginsburg & Drake (2002)	Targeted	-0.43	-1.49	0.63
Liddle & Spence (1990)	Targeted	-0.25	-1.08	0.58
Muris et al. (2008)	Targeted	-0.25	-1.18	0.68
Ginsburg et al. (2011)	Targeted	-0.24	-0.92	0.44
O'Kearney et al. (2005)	Targeted	-0.22	-0.73	0.30
Pahl & Barrett (2010)	Targeted	-0.17	-0.42	0.08
Sheffield et al. (2006)	Targeted	-0.10	-0.35	0.15
O'Kearney et al. (2009)	Targeted	-0.06	-0.37	0.26
Overall ES for Targeted Level		-0.43	-0.68	-0.19
Overall ES		-0.21	-0.24	-0.30

-3 -2.5 -2 -1.5 -1 -0.5 0 0.5 1 1.5 2 2.5 3

Figure 11. Forest plot of studies by levels of interventions at MTSS. A horizontal line represents the 95% confidence intervals of each study. The black box represents the effect size of the study. The diamond represents the overall effects across 50 studies. LL = lower limit; UL = upper limit.

3.69, $p < .05$. Targeted interventions had a larger effect size, $g = -0.43$, 95% CI [-0.68, -0.19], $z = -3.47$, $p < .05$. See Figure 4 for the forest plot of effects size by types of programs.

No significant heterogeneity existed between groups, $Q_B (2) = 1.53$, $p = .47$, but significant heterogeneity was found within the groups, $Q_W (55) = 128.15$, $p < .05$. See Table 4 for the mixed method results of studies by levels of interventions at MTSS.

Types of the implementers. Two separate groups were created to demonstrate the possible effects of leaders on treatment response. Thirty-three studies were classified in the mental health administrator group, and 26 studies were classified in the teacher administration group. The primary finding demonstrated that treatments provided by mental health administrators and teacher administrators did not show any statistically significant differences. Mental health personal led interventions had a slightly higher effect size, $g = -0.28$, 95% CI [-0.38, -0.19], $z = -5.59$, $p < .05$ than the treatments that led by teachers, $g = -0.23$, 95% CI [-0.30, -0.16], $z = -6.23$, $p < .05$. See Figure 5 for the forest plot of effects size by types of programs.

There was significant heterogeneity within the groups, $Q_B (57) = 127.70$, p $< .05$ and non-significant heterogeneity between the groups $Q_W (1) = 0.54$, $p = 0.46$. See Table 5 for the mixed method results of the studies by types of implementers.

Types of internalizing problem. The first group included anxiety-related disorders studies (n=45), and the second group included (n=34) depression-related disorders studies. Both groups showed similar results. CBTs to treat anxiety disorders had a slightly higher effect size, $g = -0.25$, 95% CI [-0.32, -0.15], $z = -5.47$, $p < .05$ than CBTS to treat depression disorders, $g = -0.17$, 95% CI [-0.22, -0.13], $z = -7.29$, $p < .05$. See Figure 6 for the forest plot of effects size by the types of internalizing disorders.

Study	Moderator	Hedges' g	LL	UL	Hedges' g and 95% CI
Masia et al (2001)	MHA	-1.61	-2.91	-0.31	
Masia et al. (2004)	MHA	-1.30	-2.03	-0.57	
Cooley et al. (2004)	MHA	-1.23	-2.19	-0.27	
Warner et al. (2007	MHA	-1.22	-1.98	-0.46	
Cardemil et al. (2002)	MHA	-1.14	-2.03	-0.25	
Chiu et al. (2013)	MHA	-1.08	-1.75	-0.41	
Barrett et al. (2000)	MHA	-0.93	-1.95	0.09	
Muris et al. (2008)	MHA	-0.51	-0.93	-0.09	
Dobson et al. (2010)	MHA	-0.49	-1.05	0.07	
Ginsburg & Drake (2002)	MHA	-0.47	-1.62	0.68	
Jaycox et al. (1994)	MHA	-0.42	-0.78	-0.06	
Stallard et al. (2007)	MHA	-0.42	-0.72	-0.12	
Horowitz et al. (2007)	MHA	-0.36	-0.60	-0.12	
Cardemil et al. (2002)	MHA	-0.31	-0.70	0.08	
Shocet et al. (2001)	MHA	-0.31	-0.64	0.02	
Lock & Barrett (2003)	MHA	-0.29	-0.44	-0.14	
Cardemil et al. (2002)	MHA	-0.28	-0.87	0.31	
Bernstein et al., 2005	MHA	-0.28	-0.90	0.34	
Barrett & Turner (2001)	MHA	-0.27	-0.49	-0.05	
Liddle & Spence (1990)	MHA	-0.26	-1.12	0.60	
Muris et al. (2008)	MHA	-0.26	-1.24	0.72	
Ginsburg et al. (2011)	MHA	-0.25	-0.95	0.45	
O'Kearney et al. (2005)	MHA	-0.22	-0.74	0.30	
Shocet et al. (2001)	MHA	-0.22	-0.53	0.09	
Stallard et al., 2005	MHA	-0.22	-0.42	-0.02	
Manassis et al. (2010)	MHA	-0.15	-0.47	0.17	
McCarty et al. (2013)	MHA	-0.14	-0.51	0.23	
Roberts et al. (2003)	MHA	-0.12	-0.41	0.17	
O'Kearney et al. (2009)	MHA	-0.06	-0.38	0.26	
Barrett & Turner (2001)	MHA	0.06	-0.32	0.44	
Dadds et al. (1997)	MHA	0.10	-0.25	0.45	
Barrett et al. (2005)	MHA	0.15	-0.08	0.38	
Barrett et al. (2005)	MHA	0.21	-0.26	0.68	
Overall ES for MHP		-0.24	-0.28	-0.38	
Barrett et al., 2001	TA	-0.79	-1.08	-0.50	
Hunt et al., 2009	TA	-0.57	-0.95	-0.19	
Kowalenko et al., 2005	TA	-0.50	-0.76	-0.24	
Stice et al., 2008	TA	-0.50	-0.94	-0.06	
Mifsud et al., 2005	TA	-0.47	-0.77	-0.17	
Lowry-Webster et al., 2001	TA	-0.41	-0.83	0.01	
Chaplin et al., 2006	TA	-0.39	-0.58	-0.20	
Barrett et al., 2003	TA	-0.36	-0.84	0.12	
Spence et al., 2003	TA	-0.34	-0.57	-0.11	
Spence et al., 2003	TA	-0.32	-0.45	-0.19	
Barrett & Turner, 2001	TA	-0.23	-0.44	-0.02	
Harnett & Dadds, 2004	TA	-0.21	-0.31	-0.11	
Aune & Stiles, 2009	TA	-0.13	-0.35	0.09	
Cutuli et al. 2013	TA	-0.22	-0.49	0.05	
Calear et al., 2009	TA	-0.20	-0.41	0.01	
Miller et al., 2011	TA	-0.19	-0.37	-0.01	
Sheffield et al., 2006	TA	-0.17	-0.28	-0.06	
Gillham et al., 2006	TA	-0.17	-0.42	0.08	
Sheffield et al., 2006	TA	-0.12	-0.29	0.05	
Sheffield et al., 2006	TA	-0.10	-0.35	0.15	
Pahl & Barrett, 2010	TA	-0.08	-0.70	0.54	
Barrett & Turner, 2001	TA	-0.07	-0.32	0.18	
Moster & Loxton, 2008	TA	-0.05	-0.30	0.20	
Merry et al., 2004	TA	-0.04	-0.62	0.54	
Roberts et al., 2010	TA	0.17	-0.02	0.36	
Miller et al., 2010	TA	0.21	-0.17	0.59	
Overall ES for SP		-0.23	-0.30	-0.16	
Overall ES		-0.25	-0.31	-0.19	

-3.00 -2.50 -2.00 -1.50 -1.00 -0.50 0.00 0.50 1.00 1.50 2.00 2.50 3.00
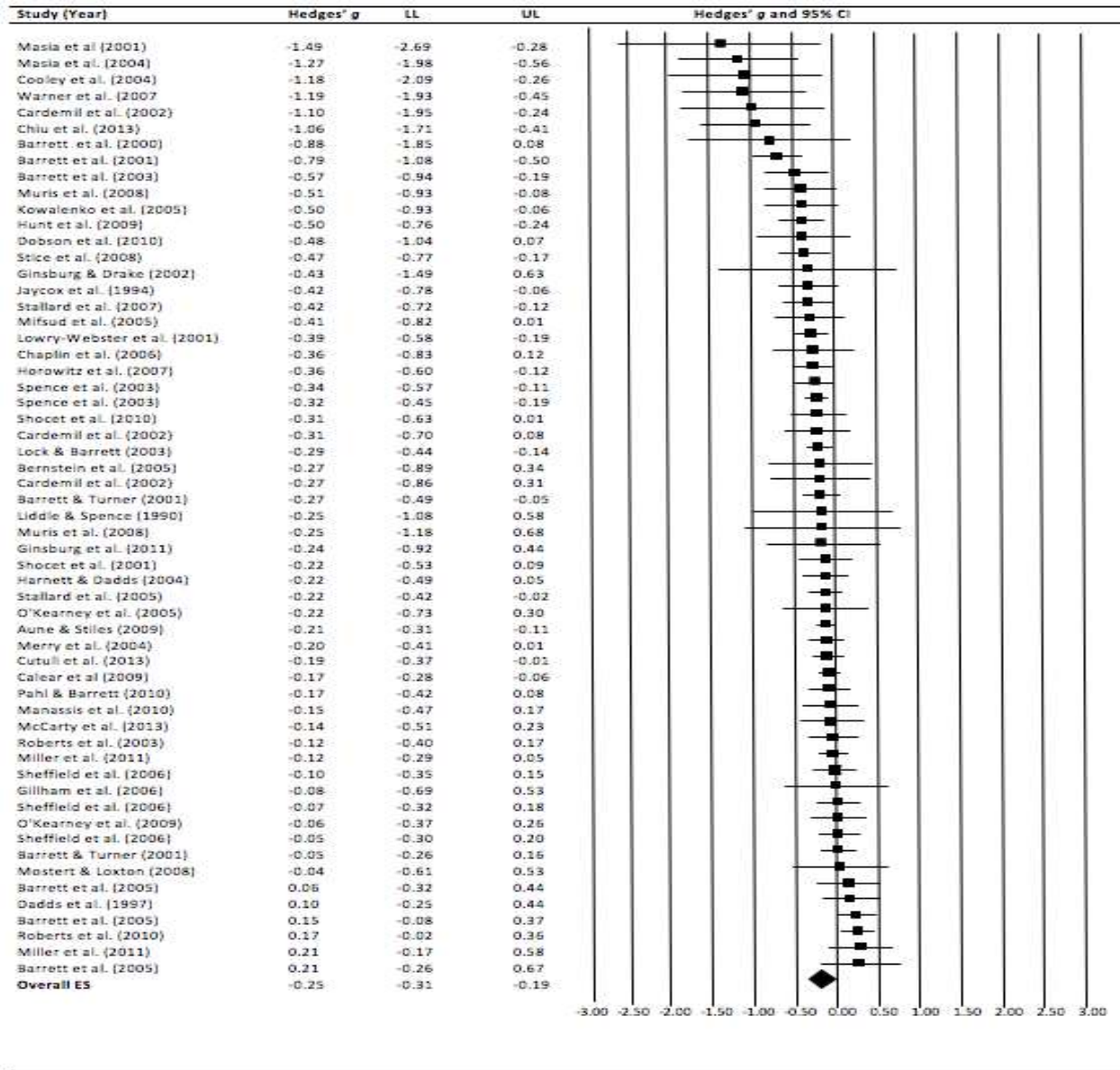
Figure 12. Forest plot of studies by types of implementers. A horizontal line represents the 95% confidence intervals of each study. The black box represents the effect size of the study. The diamond represen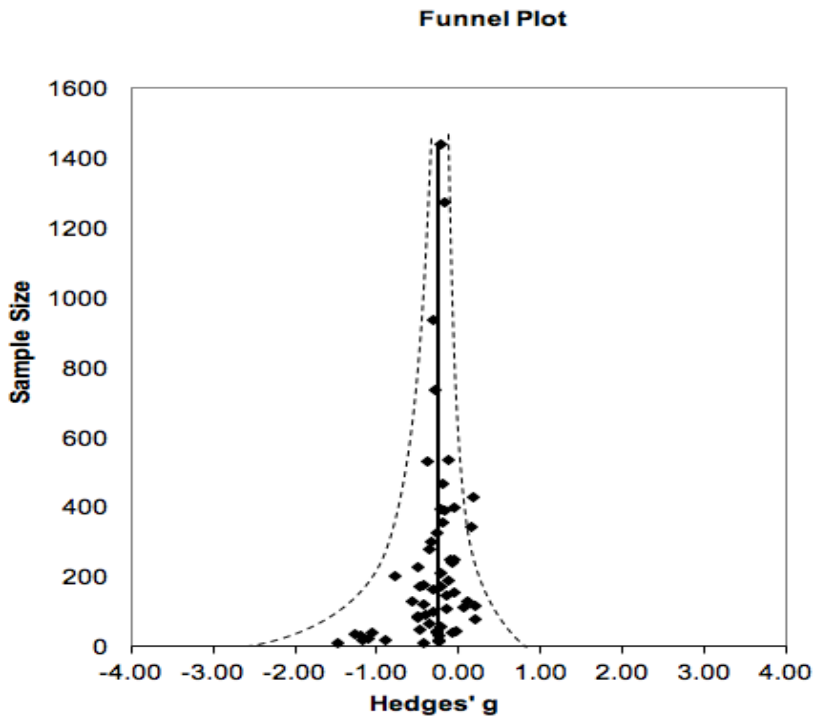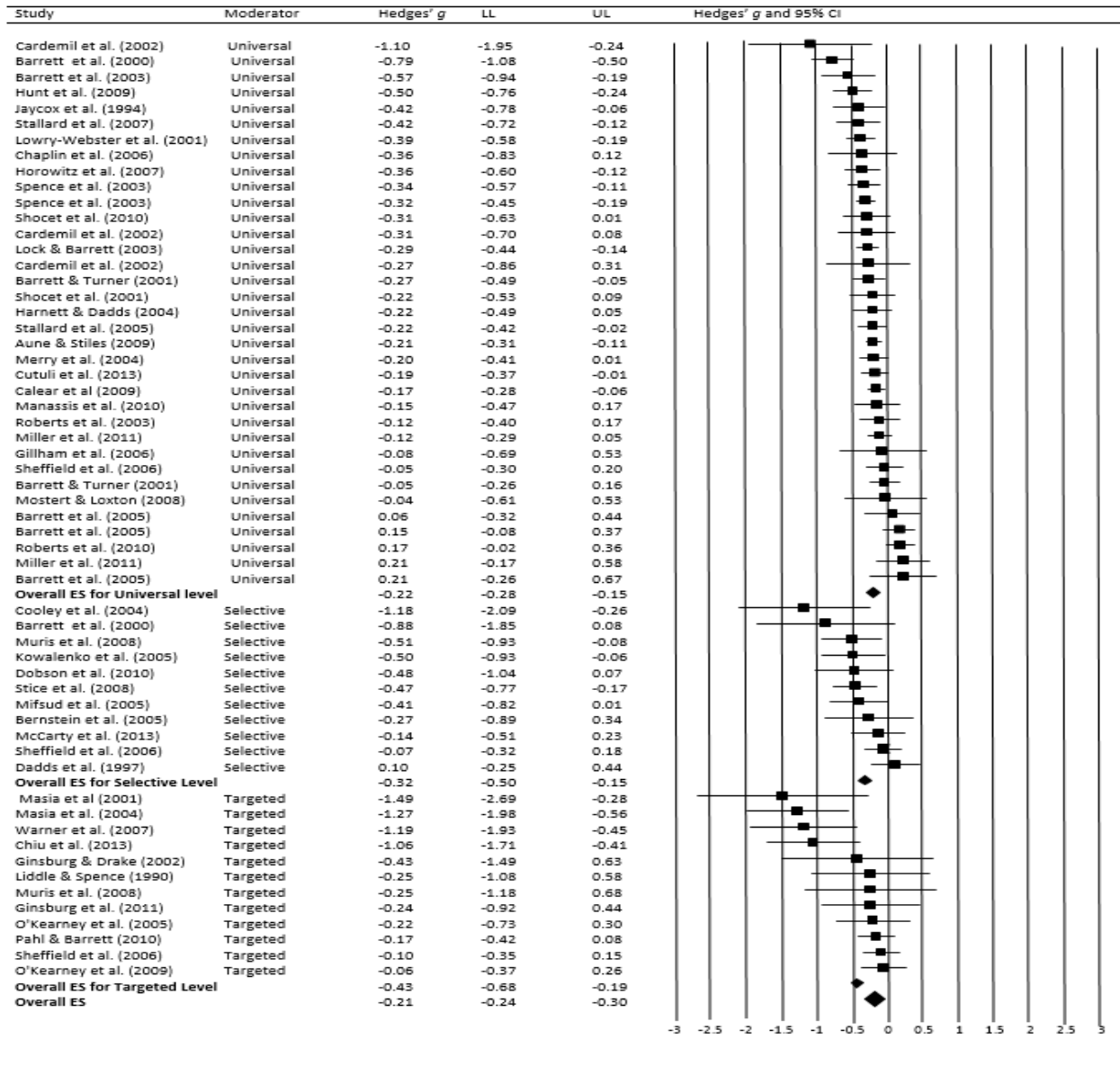ts the overall effects across 50 studies. MHA = mental health administration; SA = school administration; SLL = lower limit; UL = upper limit.

There is significant heterogeneity within the groups, Q_B (77) = 264.55, p < .05, and non-significant heterogeneity between the groups Q_W (1) = 0.81, p = 0.37. See Table 6 for Q-Statistics of studies by the types of internalizing disorders.

Discussion

The main purpose of this meta-analysis was to demonstrate the efficacy of school-based CBTs on reducing internalizing problems in children. Previous meta-analyses included a limited number of studies with limited types of the internalizing problems (Hil-Panahan et al., 2007; n = 15); Neil and Christensen, 2009; n = 20). The limited number of studies had the potential to lead to inaccurate results. The current meta-analysis added eight more studies (n = 50) to provide more reliable and meaningful results. The second purpose of the current study was to determine potential moderators on the efficacy of treatments. Neither Hil-Panahan et al. (2007) nor Neil and Christensen (2009) reported any potential moderators. Because of this, the levels of interventions at MTSS, the types of the implementers and the types of the internalizing problems were analyzed as moderators of treatment response.

The results of this meta-analysis supported the conclusion that school-based CBT treatments have the potential to reduce the level of internalizing problems in children. However, a small effect size was found (g = -0.25). This finding suggests that school-based CBTs may be useful to minimize internalizing problems of children within the MTSS. The primary finding of this study was smaller than the previous two meta-analyses (Hil-Panahan et al., 2007; Neil & Christensen, 2009). The main reason for this difference may be that including more studies in this current study provided more reliable and meaningful results because Nil-Panahan et al. (2007) and Neil

& Christensen (2009) included 15 and 20 studies respectively. This current study included 50 studies. Visual inspection of the funnel plot also demonstrated that studies fit well based on their sample sizes, and studies with large sample sizes were located very close to the overall effect size.

Only 6 of the 50 studies had particularly large effect sizes, and the others had similar results. The main reason for large effect sizes maybe because of their small sample sizes for participants. The sample sizes of these six studies were small ranging from 12 to 44. Because of small sample sizes with large effect sizes, these studies had smaller weights in the calculation of overall effects. As a result, these studies did not affect the results significantly. With a small sized group, children may have had more time to use and apply cognitive skills and more time to be treated by the implementer. As Clarke et al. (2016) mentioned, using cognitive skills takes time for children. Likewise, children may need extra time to understand and apply the newly learned cognitive strategies for coping with their feelings (Clarke et al., 2016). For instance, Calear et al. (2009) included only five weekly sessions of 20-40 minutes to work with 1,273 children in developing cognitive skills. As a result, they found a small effect size ($g = -0.15$). In contrast, Masia et al. (2002) indicated that extended treatment length may improve the effectiveness of CBT and skill maintenance with small sample of students (n = 6). Masia et al. (2002) incorporated 14 weekly 40-minute CBT sessions for developing cognitive skills and found a significant impact for reducing the level of anxiety in participants. The results of these studies showed that children were able to develop the necessary cognitive skills to explore feelings and modify automatic thoughts given enough time. Results of the moderator analysis by levels of the intervention at MTSS also support this hypothesis because targeted CBTs that

included more individual and small sample sizes of participants for the treatment were more

effective than universal or intensive interventions.

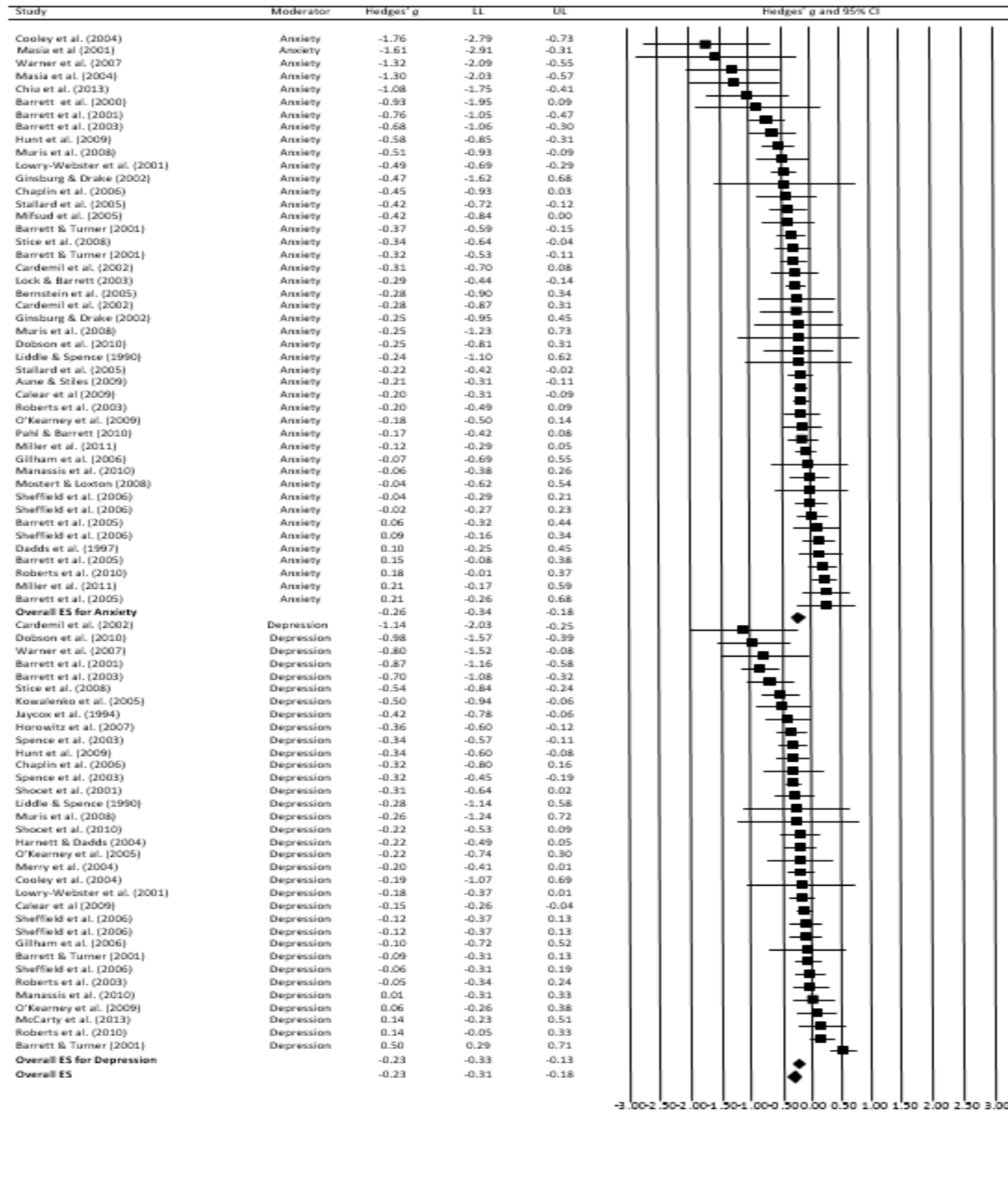| Study	Moderator	Hedges' g	LL	UL
Cooley et al. (2004)	Anxiety	-1.76	-2.79	-0.73
Masia et al (2001)	Anxiety	-1.61	-2.91	-0.31
Warner et al. (2007	Anxiety	-1.32	-2.09	-0.55
Masia et al. (2004)	Anxiety	-1.30	-2.03	-0.57
Chiu et al. (2013)	Anxiety	-1.08	-1.75	-0.41
Barrett et al. (2000)	Anxiety	-0.93	-1.95	0.09
Barrett et al. (2001)	Anxiety	-0.76	-1.05	-0.47
Barrett et al. (2003)	Anxiety	-0.68	-1.06	-0.30
Hunt et al. (2009)	Anxiety	-0.58	-0.85	-0.31
Muris et al. (2008)	Anxiety	-0.51	-0.93	-0.09
Lowry-Webster et al. (2001)	Anxiety	-0.49	-0.69	-0.29
Ginsburg & Drake (2002)	Anxiety	-0.47	-1.62	0.68
Chaplin et al. (2006)	Anxiety	-0.45	-0.93	0.03
Stallard et al. (2005)	Anxiety	-0.42	-0.72	-0.12
Mifsud et al. (2005)	Anxiety	-0.42	-0.84	0.00
Barrett & Turner (2001)	Anxiety	-0.37	-0.59	-0.15
Stice et al. (2008)	Anxiety	-0.34	-0.64	-0.04
Barrett & Turner (2001)	Anxiety	-0.32	-0.53	-0.11
Cardemil et al. (2002)	Anxiety	-0.31	-0.70	0.08
Lock & Barrett (2003)	Anxiety	-0.29	-0.44	-0.14
Bernstein et al. (2005)	Anxiety	-0.28	-0.90	0.34
Cardemil et al. (2002)	Anxiety	-0.28	-0.87	0.31
Ginsburg & Drake (2002)	Anxiety	-0.25	-0.95	0.45
Muris et al. (2008)	Anxiety	-0.25	-1.23	0.73
Dobson et al. (2010)	Anxiety	-0.25	-0.81	0.31
Liddle & Spence (1990)	Anxiety	-0.24	-1.10	0.62
Stallard et al. (2005)	Anxiety	-0.22	-0.42	-0.02
Aune & Stiles (2009)	Anxiety	-0.21	-0.31	-0.11
Calear et al (2009)	Anxiety	-0.20	-0.31	-0.09
Roberts et al. (2003)	Anxiety	-0.20	-0.49	0.09
O'Kearney et al. (2009)	Anxiety	-0.18	-0.50	0.14
Pahl & Barrett (2010)	Anxiety	-0.17	-0.42	0.08
Miller et al. (2011)	Anxiety	-0.12	-0.29	0.05
Gillham et al. (2006)	Anxiety	-0.07	-0.69	0.55
Manassis et al. (2010)	Anxiety	-0.06	-0.38	0.26
Mostert & Loxton (2008)	Anxiety	-0.04	-0.62	0.54
Sheffield et al. (2006)	Anxiety	-0.04	-0.29	0.21
Sheffield et al. (2006)	Anxiety	-0.02	-0.27	0.23
Barrett et al. (2005)	Anxiety	0.06	-0.32	0.44
Sheffield et al. (2006)	Anxiety	0.09	-0.16	0.34
Dadds et al. (1997)	Anxiety	0.10	-0.25	0.45
Barrett et al. (2005)	Anxiety	0.15	-0.08	0.38
Roberts et al. (2010)	Anxiety	0.18	-0.01	0.37
Miller et al. (2011)	Anxiety	0.21	-0.17	0.59
Barrett et al. (2005)	Anxiety	0.21	-0.26	0.68
Overall ES for Anxiety		-0.26	-0.34	-0.18
Cardemil et al. (2002)	Depression	-1.14	-2.03	-0.25
Dobson et al. (2010)	Depression	-0.98	-1.57	-0.39
Warner et al. (2007)	Depression	-0.80	-1.52	-0.08
Barrett et al. (2001)	Depression	-0.87	-1.16	-0.58
Barrett et al. (2003)	Depression	-0.70	-1.08	-0.32
Stice et al. (2008)	Depression	-0.54	-0.84	-0.24
Kowalenko et al. (2005)	Depression	-0.50	-0.94	-0.06
Jaycox et al. (1994)	Depression	-0.42	-0.78	-0.06
Horowitz et al. (2007)	Depression	-0.36	-0.60	-0.12
Spence et al. (2003)	Depression	-0.34	-0.57	-0.11
Hunt et al. (2009)	Depression	-0.34	-0.60	-0.08
Chaplin et al. (2006)	Depression	-0.32	-0.80	0.16
Spence et al. (2003)	Depression	-0.32	-0.45	-0.19
Shocet et al. (2001)	Depression	-0.31	-0.64	0.02
Liddle & Spence (1990)	Depression	-0.28	-1.14	0.58
Muris et al. (2008)	Depression	-0.26	-1.24	0.72
Shocet et al. (2010)	Depression	-0.22	-0.53	0.09
Harnett & Dadds (2004)	Depression	-0.22	-0.49	0.05
O'Kearney et al. (2005)	Depression	-0.22	-0.74	0.30
Merry et al. (2004)	Depression	-0.20	-0.41	0.01
Cooley et al. (2004)	Depression	-0.19	-1.07	0.69
Lowry-Webster et al. (2001)	Depression	-0.18	-0.37	0.01
Calear et al (2009)	Depression	-0.15	-0.26	-0.04
Sheffield et al. (2006)	Depression	-0.12	-0.37	0.13
Sheffield et al. (2006)	Depression	-0.12	-0.37	0.13
Gillham et al. (2006)	Depression	-0.10	-0.72	0.52
Barrett & Turner (2001)	Depression	-0.09	-0.31	0.13
Sheffield et al. (2006)	Depression	-0.06	-0.31	0.19
Roberts et al. (2003)	Depression	-0.05	-0.34	0.24
Manassis et al. (2010)	Depression	0.01	-0.31	0.33
O'Kearney et al. (2009)	Depression	0.06	-0.26	0.38
McCarty et al. (2013)	Depression	0.14	-0.23	0.51
Roberts et al. (2010)	Depression	0.14	-0.05	0.33
Barrett & Turner (2001)	Depression	0.50	0.29	0.71
Overall ES for Depression		-0.23	-0.33	-0.13
Overall ES		-0.23	-0.31	-0.18

Figure 13. Forest plot of studies by types of internalizing problems. A horizontal line represents the 95% confidence intervals of each study. The black box represents the effect size of the study. The diamond represents the overall effects across 50 studies. LL = lower limit; UL = upper limit.

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The Q-statistics also found a significant dispersion across the effect sizes in this study. This finding suggested that dispersion across the effect sizes is not due to random errors and there are significant differences across the studies. In other words, Q-statistics demonstrated that a very small portion of the observed variance was due to random differences in the effect size. To understand differences between studies better, possible moderators, 1) the levels of intervention at MTSS (universal, selective and targeted interventions), 2) the types of implementers (mental health personal or school personal), and 3) the types of the internalizing problems (anxiety-related disorders or depression related disorder) were analyzed to address the second research question that sought to determine if these indicators were significant moderators for the studies.

All three possible moderators show significant differences within the subgroups, and they did not show significant differences between the groups. This finding suggests that none of these moderators produced statistically significant effects on treatment response, and the observed variance between studies was due to other factors than these three moderators.

All subgroups of the potential moderators showed similar results with overall effect of the included studies except subgroup of targeted interventions. However, the interventions across the different levels of trials produced small effects sizes, and targeted CBTs ($g = -0.43$) were more effective than universal ($g = -0.32$) or intensive CBTs ($g = -0.22$), school-based CBTs showed potential to manage internalizing problems for all children as universal interventions or as intensive interventions. As of today, clinical research has demonstrated the efficacy of the CBTs in different formats for children with a broad range of internalizing problems in clinic settings (Barrett, 1998; Kendall, 1994). Therefore, the main reasons for this unsuccessful implementation in school setting should be provided (Neil & Christensen, 2009). The literature

demonstrated, however, there are many different types of effective treatments, and most children with internalizing problems do not receive treatment because of the underestimation of their needs for treatment by their teachers in school settings (Masia-Warner et al., 2007). The treatment of CBTs for children within the MTTS may have several of these essential benefits including providing treatment access to all these children, identifying "at risk" children and minimizing the risks of existing the internalizing problems. Therefore, providing universal or selective interventions of CBTs for all children within the school setting is essential. (Harnett & Dadds, 2004; Lock & Barrett, 2003; Merry et al., 2004).

The moderator analysis by levels of the intervention at MTSS also demonstrated that the efficacy of the studies increased with decreased sample sizes of the participants. These findings may suggest that transferring CBTs in school setting is still in progress and transferring CBTs in school settings inappropriately may cause the lack of implementation in a large sample sizes. Thus, the included studies may have led to inaccurate results. The primary finding of the first study in this dissertation and results of the Neil & Christensen (2009) also demonstrated the lack of fidelity of the implementation for CBTs in school settings. Therefore, the finding of this moderator analysis may point out that children may need the opportunity to access a range of cognitive and behavioral strategies as they have in clinic settings for controlling their internalizing problems in school settings. With the lack of the implementation fidelity, researchers may not provide sufficient evidence that school-based CBTs provide the opportunity to students with fundamental core elements of a program with appropriate monitoring of practices (Neil & Christensen, 2009)

Effects of treatment leaders on treatment response were found to be similar, and they yielded small treatment effects sizes. The results revealed that there is not a substantial

dispersion between studies led by educators (g = -0.23) and those led by mental health

professionals (g = -0.28). This finding may also support the hypothesis that school personals may

apply school-based CBT for children through a classroom curriculum in school settings (Barrett

& Turner, 2001). Because of the limited numbers of the mental health professionals and

resources, researchers are likely to focus on modified CBTs for educators to implement in school

settings (Calear et al., 2009; Harnett & Dadds, 2004). Barrett et al. (2005) argued this hypothesis

with previous literature and demonstrated that school staff also can implement school-based

CBTs successfully to reduce the symptoms of anxiety in a school setting. This finding may

support this hypothesis and may point to the ability of applying school-based CBTs by educators

with more cost and time efficient.

The results of types of internalizing problems also did not exhibit significant differences.

Treatments for anxiety-related disorders (g = -0.26) were slightly more effective than depression-

related disorders (g = -0.23). The primary finding of this moderator analysis was similar to the

literature review given that the literature indicates a strong relationship between anxiety and

depression (Barrett et al., 2000; Cardemil et al., 2002). This finding has particular importance.

Because a strong relationship between anxiety and depression, schools should also provide the

opportunity for student's not only to address anxiety-related problems, but also to address

depression-related problems. School-based CBTs may help educators to manage these two types

of the problems with similar components (Cardemil et al, 2002).

Limitations

Implementation of the School-based CBT is in its preliminary stages and shows

promising results, but findings of this meta-analysis should be considered in light of several

limitations. The first and most notable limitation of this study was the number of studies. A

limited number of studies still can cause variability of the weighted mean ESs and quickly manipulate the homogeneity test. Because of the limited number of studies, the results of the heterogeneity test between or within the moderator groups were not analyzed properly.

The limited information related to studies was the second limitation of this meta-analysis. To determine possible factors that can cause the differences for treatment response additional factors should be studied. These include investigating either individual factors or environmental factors as possible moderators such as intelligence, school environment or characteristics of teachers and parents. For instance, previous studies have demonstrated a strong relationship between parental stress and anxiety in children. Relatives can cause children to develop and maintain anxiety (Ginsburg & Schlossberg, 2002; Rapee, 2001). Most of the included studies did not provide enough information related to family characteristics such as level of parental anxiety or which parent was involved (mother or father). The lack of parental information may lead to incorrect conclusions based on the results of moderators.

The third limitation of the study was the variation of CBT treatments and protocol differences. Most studies modified both the process and the content of the CBT program to adapt them in the school settings. These variations and modifications need to be tested and shown to be effective and reliable in reducing internalizing problems in children.

CHAPTER IV

CONCLUSION

Cognitive Behavioral Therapy (CBT) is one of the evidence-based psychosocial practices was developed to treat and prevent the development a broad range of problems typically developing children, adolescents, and adults (Chorpita, 2007; Kendall 1993). Previous studies have demonstrated the efficacy of the CBTs within different settings such as in individual, group or parent formats for both child and adolescents in clinics settings (James et al., 2013). Because school is one of the best environment to access children, researchers have focused on transferring CBTs from clinics to schools for providing treatment for children's needs. In transferring CBTs from clinic to school settings, most researchers need to modify both the process and content of the CBT programs to use them more effectively in school settings. Moreover, because the implementation of the CBTs by a mental health person is not appropriate all the time in school settings and is not cost or time efficient, researchers are likely to focus on modified CBTs for educators to implement in school settings. However, a growing body of evidence exists about the value of CBTs in reducing a variety of internalizing problems of children in schools with significant modifications and major changes (Schaeffer et al., 2005). These variations and modifications of the CBTs need to be tested and shown to be effective and reliable in reducing internalizing problems in children. Additionally, internalizing problems include a broad range of disorders such as anxiety-related disorder, depression, social withdrawal, and somatic complaints (Merrell & Gueldner, 2010). As of today, the effects of the school-based CBTs on each specific type of internalizing problem remain unclear. The first part of this dissertation addresses the evaluation of the quality indicators of school-based CBTs on students with or at risk of

developing any types of internalizing problems because of these modifications and additions to CBTs protocols. The second part of study was designed to provide an overview of the overall efficacy of the school-based CBTs for children at risk of existing internalizing problems and to evaluate the possible effects of the level of the intervention at MTSS, the types of the implementers, and the types of disorders on the efficacy of the CBT treatments.

In summary, the first study indicates that that most studies did not meet CEC (2014) research quality criteria to be considered as an evidence-based practices. Only two studies met all components of the quality indicators. Overall, most studies provided accurate information related to content and settings, intervention agent, description of practice, internal validity and outcome measure. Most studies lacked the disability or risk status of participants and did not describe specific training or qualifications for the implementer or implementation fidelity. Without sufficient information related to the disability or risk status of participants and specific training or qualifications for the implementer, generalizing the results of the reviewed studies may be problematic (Gersten et al., 2005 Hofman et al., 2012), and this missing information may cause significant problems for administering interventions by the other researchers or educators. Describing the risk status of participants and the specific training and qualifications required to implement an intervention is significant not only for a study to achieve more reliable results, but also for readers to evaluate the implementation of a specific treatment for a specific population. Moreover, the findings of the current study demonstrated that implementation fidelity was missing for most of the studies. Implantation fidelity is important because it helps readers to determine the relationship between the independent and dependent variables (Wheeler et al., 2006). The implementation of the school-based CBT is it in early stages with a variety of adoptions and modifications. Therefore, researchers should provide sufficient evidence that a

certain practice is delivered with fundamental core elements of a program with the appropriate

monitoring of practice.

Future studies should demonstrate the effects of school-based CBTs for children with or

at risk of existing internalizing problems. Otherwise, the lack of implementation fidelity limits

the confidence in the results of a study.

The second part of the study was a systematic meta-analysis examining the efficacy of

school-based CBTs for children. The findings of the second study suggest that school-based

CBTs may be useful to minimize the internalizing problems of children within in the MTSS (Hil-

Panahan et al., 2007; Neil & Christensen, 2009). The results of the current meta-analysis also

demonstrated that statistical differences exist between the studies that are not due to random

differences in the effect size. Three factors, 1) the levels of interventions at MTSS, 2) the types

of implementers, and 3) the types of internalizing problems, were tested to evaluate the efficacy

of these factors on treatment response. The results of the moderators suggested that none of

these factors had a significant effect on the treatment response. Moreover, subgroups of the

potential moderators also did not show any statistically significant differences. The finding of

moderator analysis points out that targeted school-based CBTs are more effective and that

universal and intensive CBTs also may help all children in school settings by the implementation

of educators not only for children anxiety-related disorders, but also for children with

depression-related disorders. Future studies should focus on demonstrating moderators that cause

this dispersion across studies.

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Footnotes

*References marked with an asterisk indicate studies included in the meta-analysis.

APPENDIX A

Quality Indicators Rubric for Experimental Group Comparison Designs

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Quality Indicators

1.0 Context and Setting*. The study provides sufficient information regarding the critical feature of the context or setting.*

    1.1   The design describes critical features of the context or setting relevant to the review; for example, the type of program or classroom, the type of school (e.g., public, private, charter, preschool),

            curriculum, geographic location, community setting, socioeconomic status, and physical layout.

2.0 Participants. *The study provides sufficient information to identify the population of participants to which results may be generalized and to determine or confirm whether the participants demonstrated the disability or difficulty of focus.*

    2.1   The study describes participant demographics relevant to the review (e.g., gender, age/grade, race/ethnicity, socioeconomic status, and language status).

    2.2   The study describes disability or risk status of the participants (e.g., specific learning disability, autism spectrum disorder, behavior problem, at risk for reading failure) and method for

            determining status (e.g., identified by school using state IDEA criteria, teacher nomination, standardized intelligence test, curriculum-based measurement probes, and rating scale).

3.0 Intervention Agent. *The study provides sufficient information regarding the critical features of the intervention agent.*

    3.1   The study describes the role of the intervention agent (e.g., teacher, researcher, paraprofessional, parent, volunteer, peer tutor, sibling, and technological device/computer) and, as relevant to the

            review, background variables (e.g., race/ethnicity, educational background/licensure).

    3.2   The study describes any specific training (e.g., amount of training, training to a criterion) or qualifications (e.g., professional credential) required to implement the intervention and indicates that

            the interventionist has achieved them.

4.0 Description of Practice. *The study provides sufficient information regarding the critical features of the practice (intervention), such that the practice is clearly understood and can be reasonably replicated.*

    4.1   The study describes detailed intervention procedures (e.g., intervention components, instructional behaviors, critical or active elements, annualized or scripted procedures, dosage) and

            intervention agents' actions (e.g., prompts, verbalizations, physical behaviors, and proximity), or cites one or more accessible sources that provide this information.

    4.2   When relevant, the study describes materials (e.g., manipulatives, worksheets, timers, cues, toys), or cites one or more accessible sources providing this information.

4.0 Implementation Fidelity. *The practice is implemented with fidelity.*

    5.1   The study assesses and reports implementation fidelity related to adherence using direct, reliable measures (e.g., observations using a checklist of critical elements of practice).

    5.2   The study assesses and reports implementation fidelity related to dosage or exposure using direct, reliable measures (e.g., observations or self-report of the duration, frequency, curriculum coverage of implementation).

Quality Indicators

5.3 As appropriate, the study assesses and reports implementation fidelity (a) regularly throughout implementation of the intervention (e.g., beginning, middle, end of the intervention period), and (b)

for each interventionist, each setting, and each participant or other unit of analysis. If either adherence or dosage is assessed and reported, this item applies to the type of fidelity assessed. If

neither adherence nor dosage is assessed and reported, this item is not applicable.

6.0 Internal Validity. *The independent variable is under the control of the experimenter. The study describes the services provided in control and comparison conditions and phases. The research design provides sufficient evidence that the independent variable causes change in the dependent variable or variables. Participants stayed with the study, so attrition is not a significant threat to internal validity.*

6.1 The researcher controls and systematically manipulates the independent variable.

6.2 The study describes baseline (single-subject studies) or control/comparison (group comparison studies) conditions, such as the curriculum, instruction, and interventions (e.g., definition, duration,

length, frequency, and learner: instructor ratio).

6.3 Control/comparison condition or baseline condition participants have no or extremely limited access to the treatment intervention.

6.4 The study clearly describes assignment to groups, which involves participants (or classrooms, schools, or other unit of analysis) being assigned to groups in one of the following ways:

   (a) randomly;
   (b) non-randomly, but the comparison groups are matched very closely to the intervention group (e.g., matched on prior test scores, demographics, a propensity score; see Song & Herman, 2010);
   (c) non-randomly, but techniques are used to measure differences and, meaningful differences are identified—for example, statistically significant difference, difference greater than 5% of a standard deviation (What Works Clearinghouse, 2011)—to statistically control for any differences between groups on relevant pretest scores or demographic characteristics (e.g., statistically adjust for confounding variable through techniques such as ANCOVA or propensity score analysis); or
   (d) Non-randomly on the basis of a reasonable cutoff point.

6.5 This Indicator does not apply to experimental group design studies.

6.6 This Indicator does not apply to experimental group design studies.

6.7 This Indicator does not apply to experimental group design studies.

6.8 Overall attrition is low across groups (e.g., < 30% in a 1-year study).

6.9 Differential attrition (between groups) is low (e.g., ≤10%) or is controlled for by adjusting for non-completers (e.g., conducting intent-to-treat analysis).

Quality Indicators

7.0 Outcome **Measures/Dependent Variables**. *Outcome measures are applied appropriately to gauge the effect of the practice on study outcomes. Outcome measures demonstrate adequate psychometrics.*

7.1 Outcomes are socially important (e.g., they constitute or are theoretically or empirically linked to improved quality of lie, an important developmental/learning outcome, or both).

7.2 The study clearly defines and describes measurement of the dependent variables.

7.3 The study reports the effects of the intervention on all measures of the outcome targeted by the review (p levels and effect sizes or data from which effect sizes can be calculated for group comparison studies; graphed data for single-subject studies), not just those for which a positive effect is found.

7.4 Frequency and timing of outcome measures are appropriate. For most single-subject studies, a minimum of three data points per phase is necessary if a given phase is to be considered as part of a possible demonstration of experimental effect (except when fewer are justified by study author due to reasons such as measuring severe or dangerous problem behaviors and zero baseline behaviors with no likelihood of improvement without intervention). For alternating treatment designs, at least four repetitions of the alternating sequence are required (e.g., ABABABAB; see Kratochwill et al., 2013).

7.5 The study provides adequate evidence of internal reliability, inter-observer reliability, test-retest reliability, or parallel-form reliability, as relevant (e.g., score reliability coefficient $\geq$ .80, inter-observer agreement $\geq$ 80%, and kappa $\geq$ 60%).

8.0 Data **Analysis.** *Data analysis is conducted appropriately. The study reports information on effect size.*

8.1 Data analysis techniques are appropriate for comparing change in performance of two or more groups (e.g., t tests, ANOVAs/MANOVAs, ANCOVAs/MANCOVAs, hierarchical linear modeling, structural equation modeling). If atypical procedures are used, the study provides a rationale justifying the data analysis techniques.

8.2 This Indicator does not apply to experimental group design studies.

8.3 The study reports one or more appropriate effect size statistic (e.g., Cohen's d, Hedge's G, Glass's Δ, $\square$2) for all outcomes relevant to the review being conducted, even if the outcome is not statistically significant, or provides data from which appropriate effect sizes can be calculated.

Note: 6.5, 6.6, 6.7, 8.2 do not apply to experimental group comparison design.

Tables

Table 1. Characteristics of the included studies

Author (Year)	Sample Size	Gender	Age Span	Program	Level	Treatment Modality	Types of Internalizing Problem	Implementer	Dependent Variable
Aune & Stiles (2009)	1,439	692 Females	11-14 years	NUPP-SA	Universal	12 weeks (45 min. sessions) with child only	Anxiety	School Personal	SPAI-C; SCARED; SMFQ; SDQ
Barrett, Lock, & Farrell (2005)	342	NR	9-10 years	FRIENDS	Universal	10 weeks (45-60 min. +2 booster sessions) with child only	Anxiety	Mental Health personal	SCAS
Barrett, Moore, & Sonderegger (2000)	20	17 Females	14-19 years	FRIENDS	Selective	10 weeks (45-60 min. sessions) with child only	Internalizing & Anxiety	Mental Health personal	SCAS; YSR
Barrett, Sonderegger, & Sonderegger (2001)	204	97 Females	6-18 years	FRIENDS	Universal	10 weeks (45-60 min. sessions) with child only	Anxiety & Depression	School Personal	RCMAS; TSCL- Anx; TSCL Dep.
Barrett, Sonderegger, & Xenos (2003)	131	76 Females	6-18 years	FRIENDS	Universal	10 weeks (45-60 min. sessions) with child only	Anxiety & Depression	School Personal	BHS; KHS; RCMAS; RSES; SEI
Barrett & Turner (2001)	325	148 Females	10-12 years	FRIENDS	Universal	10 weeks (75 min. sessions) with child only	Anxiety & Depression	School Personal & Mental Health personal	SCAS; RCMAS; CDI
Bernstein et al. (2005)	41	28 Females	7-11 years	FRIENDS	Selective	9 weeks (60 min. +2 booster sessions) with child only	Anxiety	Mental Health personal	CGI; ADIS-CSR; SCARED; MASC

Table 1 (continued)

Author (Year)	Sample Size	Gender	Age Span	Program	Level	Treatment Modality	Types of Internalizing Problem	Implementer	Dependent Variable
Calear et al. (2009)	1273	826 Females	12-17 years	MoodGYM	Universal	5 weeks (20-40 min. sessions) with child only	Anxiety & Depression	School Personal	CES-D; RCMAS
Cardemil, Reivich, & Seligman (2002)	44	22 Females	10-12 years	PRP	Universal	12 weeks (90 min. sessions) with child only	Depression	Mental Health personal	ATQ; CASQ; CDI; H-scale; WAIL
Cardemil, Reivich, & Seligman (2002)	99	58 Females	10-12 years	PRP	Universal	12 weeks (90 min. sessions) with child only	Anxiety	Mental Health personal	ATQ; CASQ; CDI; H-scale; WAIL
Chaplin et al. (2006)	68	68 Females	11-14 years	PRP	Universal	12 weeks (90 min. sessions) with child only	Anxiety & Depression	School Personal	CDI; HSC; CASQ
Chiu et al. (2013)	40	22 Females	5-12 years	Building Confidence Program	Targeted	16 weeks (60 min. sessions) with child and parents	Anxiety	Mental Health personal	ADIS – CSR; CBCL-Int.; CGI-I; MASC
Cooley, Boyd, & Grados (2004)	20	7 Females	10-11 years	FRIENDS	Selective	11 weeks (60 min. sessions) with child only	Anxiety & Depression	Mental Health personal	CDI; RCMAS
Dadds et al. (1997)	128	93 Females	7-14 years	The Coping Koala	Selective	10 weeks (60-120 min. sessions) with child and parents	Anxiety	Mental Health personal	CBCL; RCMAS
Dobson et al. (2010)	50	34 Females	12-17 years	Coping with Stress	Selective	15 weeks (45 min. sessions) with child only	Anxiety & Depression	Mental Health personal	CES-D; CDI; BAI; CBCL; YSR; MASQ; RSES
Cutuli et al. (2013)	466	252 Females	5-12 years	PRP	Universal	12 weeks (90 min. sessions) with child only	Internalizing	School Personal	CBCL- Int.

Table 1 (continued)

Author (Year)	Sample Size	Gender	Age Span	Program	Level	Treatment Modality	Types of Internalizing Problem	Implementer	Dependent Variable
Gillham et al. (2006)	44	13 Females	12-13 years	PRP-CA + Parent	Universal	8 weeks (90 min. sessions) with child and parents	Depression	Mental Health personal	CDI; RCMAS
Ginsburg & Drake (2002)	12	10 Females	14-17 years	CBT	Targeted	10 weeks (45 min. sessions) with child only	Anxiety	Mental Health personal	ADIS-CIR; SAS-A; SCARED
Ginsburg et al. (2011)	32	20 Females	7 - 17 years	CBT- Kendall 1990	Targeted	12 weeks (30-45 min. sessions) with child only	Anxiety	Mental Health Providers	ADIS-CSR; SCARED; CGI-S
Harnett & Dadds (2004)	212	212 Females	12 - 16 years	Resourceful Adolescent Program	Universal	11 weeks (40-50 min. sessions) with child only	Depression	School Personal	RADS; RCMAS; ACS; FES
Horowitz et al. (2007)	281	154 Females	13 - 16 years	Coping with Stress Course	Universal	8 weeks (90 min. sessions) with child only	Depression	Mental Health personal	CES-D; CDI
Hunt et al. (2009)	228	98 Females	11 - 13 years	FRIENDS	Universal	10 weeks (50 min. sessions) with child only	Anxiety & Depression	School Personal	CDI; RCMAS; SCAS
Jaycox et al. (1994)	121	66 Females	10 - 13 years	PRP	Universal	12 weeks (60 -90 min. sessions) with child only	Depression	Mental Health personal	CDI; RCDS
Kowalenko et al. (2005)	82	44 Females	13 - 16 years	Coping with Emotions	Selective	10 weeks (90 min. sessions) with child and parents	Depression	School Personal	ACS; CATS; CDI
Liddle & Spence (1990)	21	14 Females	7 - 11 years	SCT	Targeted	8 weeks (30-40 min. sessions) with child only	Anxiety & Depression	Mental Health personal	CDI; CDRS; LSSP; MESSY

Table 1 (continued)

Author (Year)	Sample Size	Gender	Age Span	Program	Level	Treatment Modality	Types of Internalizing Problem	Implementer	Dependent Variable
Lock & Barrett (2003)	737	NR	9 - 16 years	FRIENDS	Universal	10 weeks (60 min. sessions) with child only	Anxiety	Mental Health personal	CDI; RCMAS; SCAS
Lowry-Webster, Barrett, & Dadds (2001)	531	314 Females	10 - 13 years	FRIENDS	Universal	11 weeks (60 min. sessions) with child and parents	Anxiety & Depression	School Personal	CDI; RCMAS; SCAS
Manassis et al. (2010)	148	84 Females	9 - 15 years	FEELINGS CLUB	Universal	12 weeks (60 min. sessions) with child only	Internalizing, Anxiety & Depression	Mental Health personal	CBCL; CDI; MASC; TRF Int.
Masia et al. (2004)	6	6 Females	14 - 17 years	SASS	Targeted	14 weeks (40 min. sessions) with child only	Anxiety	Mental Health personal	LS; SPAI-C
Masia et al. (2001)	35	26 Females	14 – 15 years	SASS	Targeted	12 weeks (40min. sessions) with child only	Anxiety	Mental Health personal	ADIS-PC; LSAS-CA; SPAI-C; SPDSCF
McCarty et al. (2013)	110	72 Females	11 – 15 years	PTA	Selective	14 weeks (60 min. sessions) with child only	Internalizing	Mental Health personal	BASC-2
Merry et al. (2004)	177	89 Females	13 - 15 years	RAP-Kiwi	Universal	11 weeks (40 min. sessions) with child only	Depression	School Personal	BDI-II; RADS
Mifsud, Psych, & Rapee (2005)	91	53 Females	8 – 11 years	Cool Kids Program: School Version	Selective	8 weeks (60 min. sessions) with child and parents	Internalizing	School Personal	CATS; SCAS-C; SCAS-P, TRF-Int.
Miller et al. (2010)	116	58 Females	7 - 12 years	Taming Worry Dragons	Universal	8 weeks (40 min. sessions) with child only	Internalizing & Anxiety	School Personal	BASC-Int.; MASC

Table 1 (continued)

Author (Year)	Sample Size	Gender	Age Span	Program	Level	Treatment Modality	Types of Internalizing Problem	Implementer	Dependent Variable
Miller et al. (2011)	533	267 Females	9 – 14 years	FRIENDS for Life Program	Universal	9 weeks (60 min. sessions) with child only	Anxiety	School Personal	MASC
Moster & Loxton (2008)	46	30 Females	12 years	FRIENDS	Universal	10 weeks (60 min. + 2 booster sessions) with child and parents	Anxiety	School Personal	SCAS
Muris, Bogie & Hoogsteder (2001)	16	5 Females	13 - 18 years	The Resourceful Adolescent Program	Targeted	11 weeks (40- 50 min. sessions) with child only	Anxiety & Depression	Mental Health personal	SCAS; CDI
Muris et al. (2008)	45	23 Females	9 - 12 years	The Coping Koala	Targeted	12 weeks (30 min. sessions) with child only	Anxiety	Mental Health personal	ACQC; CATS; SCARED-R
O'Kearney et al. (2005)	59	No Females	15 - 16 years	MoodGYM	Targeted	5 weeks (60 min. sessions) with child only	Depression & Self Esteem	Mental Health personal	ATTDEP; CASQ-R; CES-D; RSES
O'Kearney et al. (2009)	157	157 Females	15 - 16 years	MoodGYM	Targeted	6 weeks (60 min. sessions) with child only	Depression	Mental Health personal	DLC; RSES
Pahl & Barrett (2010)	390	126 Females	4 - 6 years	The Fun FRIENDS program	Targeted	9 weeks (60 min. sessions) with child and parents	Anxiety	School Personal	BERS; BIRS; BIQ PAS
Roberts et al. (2010)	427	270 Females	11 - 13 years	The Aussie Optimism Program	Universal	10 weeks (60 min. sessions) with child only	Anxiety & Depression	School Personal	CDI; RCMAS; MESSY

Table 1 (continued)

Author (Year)	Sample Size	Gender	Age Span	Program	Level	Treatment Modality	Types of Internalizing Problem	Implementer	Dependent Variable
Roberts et al. (2003)	189	94 Females	11 - 13 years	Prevention Program	Universal	12 weeks (60 min. sessions) with child only	Depression	Mental Health personal	CDI; RCMAS
Sheffield et al. (2006)	251	NR	13 - 15 years	CRPSST	Universal	8 weeks (45 - 90 min. sessions) with child only	Anxiety & Depression	School Personal	BHS; CDI; CATS; SCAS
Sheffield et al. (2006)	241	NR	13 - 15 years	CRPSST	Selective	16 weeks (45 - 90 min. sessions) with child only	Anxiety & Depression	School Personal	BHS; CDI; CATS; SCAS
Sheffield et al. (2006)	248	NR	13 - 15 years	CRPSST	Targeted	16 weeks (45 - 90 min. sessions) with child only	Anxiety & Depression	School Personal	BHS; CDI; CATS; SCAS
Shocet et al. (2001)	172	139 Females	12 - 15 years	RAP–A	Universal	11 weeks (45-50 min. sessions) with child only	Depression	Mental Health personal	BHS; CDI; RADS,
Shocet et al. (2001)	163	125 Females	12 - 15 years	RAP–A+ Family	Universal	11 weeks (45-50 min. sessions) with child only	Depression	Mental Health personal	BHS; CDI; RADS,
Spence, Sheffield & Donovan (2003)	1234	619 Females	12 - 14 years	PSFL	Universal	8 weeks (45-50 min. sessions) with child only	Depression	School Personal	BDI
Stallard et al. (2005)	394	NR	9 – 10 years	FRIENDS	Universal	10 weeks (60 min. sessions) with child only	Anxiety	Mental Health personal	SCAS
Stallard et al. (2007)	176	78 Females	9 - 10 years	FRIENDS	Universal	10 weeks (60 min. sessions) with child only	Anxiety	Mental Health personal	SCAS
Stice et al. (2008)	173	99 Females	14 - 18 years	CBT	Selective	6 weeks (60 min. sessions) with child only	Depression	School Personal	BDI; K-SADS; SAS-SR
Warner et al. (2007)	36	30 Females	14 – 16 years	SASS	Targeted	12 weeks (40 min. sessions) with child only	Anxiety & Depression	Mental Health personal	SAS-A; SAS-P; SPAI-C; BDI

Table 1 (continued)

Note: ACS = Adolescent Coping Scale; ACQC = Anxiety Control Questionnaire for Children; ADIS CSR = Anxiety Disorders Interview Schedule-Clinician's Severity Rating; ADIS-CIR = Clinician's Impairment Rating on the Anxiety Disorders Interview Schedule for DSM-IV Child Version; ADIS-P/C = Anxiety Disorders Interview Schedule Child/Parent Versions ; ATQ = The Automatic Thoughts Questionnaire; ATTDEP = Stigmatic attitudes to depression; BAI = Beck Anxiety Inventory; BASC-2 = The Behavior Assessment Scale for Children–Second Edition; BASC-Int. = The Behavior Assessment System for Children- Internalizing Scale; BDI = the Back Depression Inventory; BERS = Behavioral and Emotional Rating Scale, Parent Report and Teacher Report; BHS = Beck Hopelessness Scale; BIQ PAS = The Behavioral Inhibition Questionnaire, Parent Report and Teacher Report; BIRS = Behavior Intervention Rating Scale, Parent Report and Teacher Report; CASQ = The Children's Attributional Style Questionnaire; CASQ-R = Attributional Style Questionnaire; CATS = Children's Automatic Thoughts Scale; CBCL-Int = Child Behavior; Checklist–Internalizing Scale T-Score; CBT = cognitive behavioral therapy; CDI = Children's Depression Inventory; CDRS = Children's Depression Rating Scale; CES-D = Epidemiological Studies Depression Scale; CGI = Clinical Global Impressions–Improvement Scale; CGI-I = The Clinical Global Impressions - Improvement Scale; CGI-S = Clinical Global Impressions Scale—Severity; CRPSST = Cognitive Restructuring and Problem-Solving Skills Training; DLC = depression literacy scale; FES = family conflict scale of the Family Environment Scale; HSC = Hopelessness Scale for Children; H-scale = The Hopelessness Scale; KHS = Kazdin Hopelessness Scale; K-SADS= Affective Disorders and Schizophrenia for School-Age Children; LS = Liebowitz Social; Phobic Disorders Severity Form; LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents; LSSP = List of social situation problems; MASC = Multidimensional Anxiety Scale; MASQ = Mood and Anxiety Symptom Questionnaire; MESSY = The Matson Evaluation of Social Skills with Youngsters; NR = not reported; NUPP-SA = Universal Preventive Program for Social Anxiety; PRP = Penn Resiliency Program; PSFL = Problem Solving for Life; PTA = Positive thought and Actions; RADS = Reynolds Adolescent Depression Scale; RCDS = Reynolds Children's Depression Scale; RCMAS = Revised children' manifest anxiety scale; RSES = Rosenberg Self-Esteem Scale; SAS-A = Social Anxiety Scale for Adolescents; SAS-P = Social Anxiety Scale for Parent; SASS = Skills for Academic and Social Success; SAS-SR = Adjustment Scale–Self Report for Youth; SCARED = Screen for Child Anxiety-Related Emotional Disorders; SCARED-R = Screen for Child Anxiety Related Emotional Disorders; SCAS = Spence Child Anxiety Scale; SCAS-C = Spence Child Anxiety Scale Child version; SCAS-P = Spence Child Anxiety Scale Parent version; SCT = Social Competence Training; SDQ = Strength and Difficulties Questionnaire; SEI = Self-esteem inventory; SMFQ = Short Mood and Feeling Questionnaire; SPAI-C = Social Phobia and Anxiety Inventory for Children; SPDSCF = Social Phobic Disorders Severity and Change Form; The PRP-CA = the Penn Resiliency Program for Children and Adolescents; TRF Int. = Teacher Report Form, Internalizing; TSCL - Anx = TSCL - Dep =; WAIL = The Perceived Self Competence Scale/What I am Like the Coping With Stress Course; YSR = The Youth Self-report Form.

Table 2. Results of the Quality Standards and Indicators for Studies

CEC Quality Standards and Indicators for Experimental Group Comparison Designs

	1.1	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	5.3	6.1	6.2	6.3	6.4	6.8	6.9	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.3
Aune & Stiles (2009)	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
Barrett et al. (2005)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+
Barrett et al. (2000)	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Barrett et al. (2001)	+	+	-	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	-	+	+	+
Barrett et al. (2003)	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	-	-	+	+
Barrett & Turner (2001)	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
Bernstein et al. (2005)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Calear et al. (2009)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cardemil et al. (2002)	+	+	-	-	+	+	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+
Chaplin et al. (2006)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	-	-	+	+
Chiu et al. (2013)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cooley et al. (2004)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Table 2 (continued)

CEC Quality Standards and Indicators for Experimental Group Comparison Designs

	1.1	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	5.3	6.1	6.2	6.3	6.4	6.8	6.9	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.3
Cutuli et al. (2013)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	-	-	+	+
Dadds et al. (1997)	+	+	-	-	-	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Dobson et al. (2010)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	-	-	+	+
Gillham et al. (2006)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Ginsburg & Drake (2002)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Ginsburg et al. (2011)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Harnett & Dadds (2004	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Horowitz et al. (2007)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Hunt et al. (2009	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	-	+	+	+
Jaycox et al. (1994)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Kowalenko et al. (2005)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liddle & Spence (1990)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lock & Barrett (2003	+	+	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Table 2 (continued)

CEC Quality Standards and Indicators for Experimental Group Comparison Designs

	1.1	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	5.3	6.1	6.2	6.3	6.4	6.8	6.9	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.3
Lowry-Webster et al. (2001)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Manassis et al. (2010)	+	+	-	+	-	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+
Masia et al. (2004)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Masia et al. (2001)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
McCarty et al. (2013)	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Merry et al. (2004)	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mifsud et al. (2005)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Miller et al. (2010)	+	+	+	+	+	+	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Miller et al. (2011)	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
Moster & Loxton (2008)	+	+	-	-	-	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Muris et al. (2001)	+	+	+	+	-	+	+	-	-	-	+	-	+	+	-	-	+	+	+	+	-	-	+	+

Table 2 (continued)

CEC Quality Standards and Indicators for Experimental Group Comparison Designs

	1.1	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	5.3	6.1	6.2	6.3	6.4	6.8	6.9	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.3
Muris et al. (2008)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+
O'Kearney et al. (2005)	+	+	-	+	-	+	+	-	-	-	+	+	+	+	-	-	+	+	+	+	+	+	+	+
O'Kearney et al. (2009)	+	+	-	-	-	+	+	-	-	-	+	+	+	+	-	-	+	+	+	+	+	+	+	+
Pahl & Barrett (2010)	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Roberts et al. (2010)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Roberts et al. (2003)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sheffield et al. (2006)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Shocet et al. (2010)	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spence et al. (2003)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stallard et al. (2005)	+	-	-	+	-	+	+	-	-	-	+	-	+	-	-	-	+	+	+	+	+	+	+	+
Stallard et al. (2007)	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stice et al. (2008)	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Warner et al. (2007)	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Note: + = met indicator; - = did not meet indicator.

Table 3. Q-Statistics of studies included in the meta-analysis

Model	ES and 95% CI						Test of null (2-Tail)		Heterogeneity			
	N	ES	SE	Variance	LL	UL	Z-value	P-value	Q-value	df (Q)	P-value	I-squared
Fixed	58	-0.22	0.02	0.00	-0.26	-0.19	-12.60	0.00	129.67	57.00	0.00	56.04
Random effects	58	-0.25	0.03	0.00	-0.31	-0.19	-8.10	0.00				

Table 4. Mixed effect analysis of studies by intervention level

Moderator/Model	ES and 95% CI						Test of null (2-Tail)		Heterogeneity			
	N	ES	SE	Variance	LL	UL	Z-value	P-value	Q-value	df (Q)	P-value	I-squared
Universal Level	35	-0.22	0.03	0.00	-0.28	-0.15	-6.58	0.00	83.37	34.00	0.00	59.22
Selective Level	11	-0.32	0.09	0.01	-0.50	-0.15	-3.69	0.00	17.44	10.00	0.07	42.66
Targeted Level	12	-0.43	0.12	0.02	-0.68	-0.19	-3.47	0.00	27.34	11.00	0.00	59.76
Total within									128.15	55.00	0.00	
Total between									1.53	2.00	0.47	
Overall	58	-0.24	0.03	0.00	-0.30	-0.18	-8.07	0.00	129.67	57.00	0.00	56.04

Note. CI = confidence interval; ES = effect size; SE = standard error; LL = lower limit; N = number of studies; UL = upper limit.

Table 5. Mixed effects analysis of studies by type of implementer

Moderator/Model		ES and 95% CI					Test of null (2-Tail)		Heterogeneity			
	N	ES	SE	Variance	LL	UL	Z-value	P-value	Q-value	df (Q)	P-value	I-squared
MHP	33	-0.28	0.05	0.00	-0.38	-0.19	-5.59	0.00	65.03	32.00	0.00	50.79
SP	26	-0.23	0.04	0.00	-0.30	-0.16	-6.23	0.00	62.67	25.00	0.00	60.11
Total within									127.70	57.00	0.00	
Total between									0.54	1.00	0.46	
Overall	59	-0.25	0.03	0.00	-0.31	-0.19	-8.33	0.00	128.23	58.00	0.00	54.77

Note. CI = confidence interval; ES = effect size; SE = standard error; LL = lower limit; MHP = mental health professional; N = number of studies; SP = school personnel;

UL = upper limit.

Table 6. Mixed model analysis of studies by type of internalizing problem

Moderator/Model	ES and 95% CI						Test of null (2-Tail)		Heterogeneity			
	N	ES	SE	Variance	LL	UL	Z-value	P-value	Q-value	df (Q)	P-value	I-squared
Anxiety	45	-0.26	0.04	0.00	-0.34	-0.18	-6.15	0.00	135.17	44.00	0.00	67.45
Depression	34	-0.23	0.05	0.00	-0.33	-0.13	-4.67	0.00	124.07	33.00	0.00	73.40
Total within									259.23	77.00	0.00	
Total between									0.99	1.00	0.32	
Overall	79	-0.25	0.03	0.00	-0.31	-0.18	-7.71	0.00	260.23	78.00	0.00	70.03

Note. CI = confidence interval; ES = effect size; SE = standard error; LL = lower limit; HMP = mental health person; SP = school person; N = number of studies; UL =

upper limit.