COGNITIVE BEHAVIORAL TREATMENTS FOR YOUTH EXPOSED TO TRAUMATIC EVENTS: A META-ANALYSIS EXAMINING VARIABLES MODERATING AND MEDIATING TREATMENT OUTCOMES

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

School Psychology – Doctor of Philosophy

2020

ABSTRACT

COGNITIVE BEHAVIORAL TREATMENTS FOR YOUTH EXPOSED TO TRAUMATIC EVENTS: A META-ANALYSIS EXAMINING VARIABLES MODERATING AND MEDIATING TREATMENT OUTCOMES

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Due to the negative impact of exposure to traumatic events (DePrince, Weinzierl, & Combs, 2009), effective treatments are necessary to prevent/improve negative outcomes. Cognitive behavioral therapy (CBT) is considered an efficacious treatment for youth exposed to traumatic events (American Psychological Association [APA], 2008). Past meta-analyses showed larger effect sizes for youth who received general CBT and trauma-focused CBT (TF-CBT) when compared to control groups (Gutermann et al., 2016; Kowalik, Weller, Venter, & Drachman, 2011) and other forms of treatment (e.g., play therapy; Silverman et al., 2008; Slade & Warne, 2016). Despite the varying meta-analyses available examining trauma treatments, there is a paucity of research examining moderating and mediating variables that may impact treatment outcomes. This meta-analytic CBT study addressed those limitations by examining the moderating effects of study design, research study setting, trauma type, and cultural (i.e., demographic) variables (i.e., race, age, gender) on youth posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes. In addition, the mediating effect of treatment components on youth outcomes (e.g., parental involvement, treatment delivery, inclusion of other treatment techniques) within CBT studies was also examined. A search using PsycINFO, EBSCO, ERIC, and ProQuest Dissertations and Theses identified 94 CBT studies with 97 relevant effect sizes for children and adolescents exposed to traumatic events. Consistent with prior meta-analytic studies, CBT was an effective treatment for youth exposed to traumatic

events. Posttraumatic stress symptoms (d = -.57, p < .001), anxiety symptoms (d = -.40, p < .001), and depression symptoms (d = -.40, p < .001) were all found to be positively impacted by CBT. CBT subtreatments did not produce significantly different results from one another (posttraumatic stress symptoms: p = .073; depression symptoms: p = .296). All subtreatments, except for Game-Based CBT (d = -.38, p = .117), resulted in significant reductions in symptoms. Moderators significantly impacting CBT treatment outcomes for posttraumatic stress symptoms were trauma type (i.e., Q = 24.09, p = .004) and gender (i.e., Q = 10.68, p = .005) while moderators impacting treatment outcomes for depression were study design (i.e., Q = 10.95, p = .004) and treatment setting (i.e., Q = 10.98, p = .004). None of the variables examined moderated anxiety symptom outcomes. Further, no mediators were found to significantly impact posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes. The implications of these findings for research and practice are discussed.

ACKNOWLEDGEMENTS

I would like to thank my advisor and dissertation chair, Dr. John S. Carlson, for the support he has provided me throughout all my research and practice endeavors. With his feedback and guidance, I was able to test my limits. Further, Dr. Carlson's assistance in securing funds for this project via the Michigan State University (MSU) College of Education Dissertation Completion Fellowship and MSU Department of Counseling, Educational Psychology, and Special Education (CEPSE) Research Fellowship made it financially possible for me to complete this project. I would also like to thank my dissertation committee members, Dr. Martin Volker, Dr. Kristin Rispoli, and Dr. Marisa Fisher, for their feedback and suggestions. Their input contributed to making this study possible, and I appreciate their guidance in my transformation as a scholar. Additionally, I want to acknowledge Hope Akaeze and the MSU Center for Statistical Training and Consulting for the instruction provided in meta-analysis.

I am so grateful to my family and friends who have held me up during the last six years. I have learned and laughed with all my classmates, but I am particularly thankful for my cohort for all that they have done to help me survive and thrive in graduate school. I am also grateful for my loved ones who have always had faith in my abilities and kept my spirits high. I would like to thank my extended family, who have always been there for me with love, the occasional snarky comment, and great food. Most importantly, I owe the world to my parents, Ghevarghese Yohannan and Jolly Yohannan, and my brothers, Jermyn Yohannan and Joshua Yohannan. Your love and encouragement have helped me reach where I am today. Thank you for walking this path alongside me.

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CHAPTER 1

INTRODUCTION

The prevalence of exposure to at least one traumatic event among children and adolescents is high, with rates among national samples ranging from 41% (Zinzow et al., 2009) to 83% (Ford, Elhai, Connor, & Frueh, 2010). According to the American Psychiatric Association (2013), a traumatic event is "exposure to actual or threatened death, serious injury, or sexual violence" (p. 271). Similarly, the National Child Traumatic Stress Network (NCTSN, 2003) defines a traumatic event as an acute or chronic event that threatens one's well-being. Research has shown that youth who are exposed to traumatic events are at risk for negative outcomes. For example, youth exposed to traumatic events may have a variety of mental health concerns (e.g., anxiety, depression; De Young, Kenardy, & Cobham, 2011). They are also at risk for low academic performance and poor executive functioning (DePrince, Weinzierl, & Combs, 2009), lower IQ scores, and lower language abilities (Perfect, Turley, Carlson, Yohannan, & Pfenninger Saint Gilles, 2016). In certain cases, significant negative outcomes may result in trauma and stress-related disorders such as post-traumatic stress disorder (PTSD). According to a review of 43 independent samples of trauma-exposed children and adolescents, 15% of youth met diagnostic criteria for PTSD (Alisic et al., 2014). Due to the range of negative outcomes, appropriate evidence-based treatments for youth exposed to traumatic events are necessary.

There are numerous treatments (e.g., psychological, psychopharmacological) used with youth who have been exposed to traumatic events and struggle with resulting mental health challenges. To effectively target the negative outcomes youth experience after traumatic event exposure, treatment must link with outcome etiology. As seen in Figure 1, there are psychological, biological, and ecological factors that impact poor youth outcomes after exposure

to traumatic events (Masten & Narayan, 2012; McKeever & Huff, 2003; Taylor & Asmundson, 2008); trauma treatment must address these factors to improve youth functioning. For example, to address ecological factors, psychoeducation to key stakeholders might be helpful, and to address biological factors, providing relaxation training or medication might be appropriate. Examining recent meta-analyses of treatment studies to determine the current state of the literature can aid mental health professionals in deciding what treatments to use. In Strawn and colleagues' (2010) meta-analysis, which highlighted the state of psychopharmacologic research, there was limited evidence for the use of such treatment in youth with PTSD, despite this tackling the biological challenges caused by traumatization. Treatment guidelines for treating youth with PTSD [American Academy of Child and Adolescent Psychiatry (AACAP), 2010] highlight selective serotonin reuptake inhibitors as a second-line treatment (i.e., following a lack of response to psychological treatments) given the limited efficacy support for symptom improvement in youth with PTSD.

The AACAP Official Action report (2010) on treatment guidelines recommends that psychological treatment should be the initial course of action in treating youth PTSD. Through the past couple decades, multiple meta-analyses have been conducted supporting the practice guidelines regarding the use of psychological treatments for trauma in children and adolescents. In prior meta-analyses (see Table 1) examining trauma treatments, psychological treatments were examined and found to be effective, including, but not limited to, cognitive behavioral therapy (CBT), cognitive processing therapy (CPT), narrative therapy, and eye-movement desensitization and reprocessing (EMDR). For example, Gutermann and colleagues' (2016) meta-analysis of 135 studies showed the positive impact of psychological treatments (e.g., CBT, EMDR hypnotherapy, psychodynamic psychotherapy) for youth with PTSD; similarly, Morina,

Koerssen, and Pollet's (2016) meta-analysis examined 39 psychological treatments, including CBT, EMDR, mind-body skills groups, and prolonged exposure treatment. While practice guidelines (AACAP, 2010) promote the use of psychological treatments generally, the American Psychological Association (APA, 2008) specifically names CBT techniques as an effective treatment for youth exposed to traumatic events. Additionally, while prior meta-analyses found that various psychological treatments were efficacious, meaning treatment studies were replicated and were proven to improve youth outcomes (Chambless & Hollon, 1998), the evidence base for psychological treatment for youth exposed to traumatic events indicated that CBT and therapies consisting of CBT components produced the strongest outcomes (Gillies, Taylor, Gray, O'Brien, & D'Abrew, 2012; Gutermann et al., 2016; Kowalik, Weller, Venter, & Drachman, 2011; Silverman et al, 2008; Slade & Warne, 2016).

As seen in Table 2, the studies which examined the general efficacy of psychological treatments found that effect sizes for CBT were higher than for control groups and that the treatments affected various psychological constructs. For example, in Gillies and colleagues (2012) study, PTSD symptoms scores (*SMD* = -1.34) and depression scores (*SMD* = -0.80) decreased significantly while Kowalik and colleagues' (2011) research found that exposure to CBT provided statistically significant effect sizes for internalizing symptoms (g = -.31; p = .001), externalizing symptoms (g = -.19; p = .040), and total problem scores (g = -.33; p = .003), thus favoring the use of CBT over control groups. Some prior meta-analyses also found CBT to be more effective than other trauma treatments. In Silverman and colleagues' (2008) meta-analysis, the authors found that CBT had greater effect sizes than non-CBT treatments for posttraumatic stress symptoms (d = .50 vs d = .19), depression symptoms (d = .29 vs d = .08), and externalizing symptoms (d = .24 vs d = .02). Additionally, Slade and Warne (2016) found that

trauma-focused cognitive behavioral therapy (TF-CBT), a specific treatment manual using CBT techniques, had greater effect sizes than play therapy in the areas of global symptoms (d = .21 vs d = .095) and internalizing symptoms (d = .23 vs d = .096). As can be seen, prior research has focused on a variety of differing outcome measures. However, since there is an overlap in the symptomatology of PTSD, anxiety, and depression and there is evidence of high rates of comorbidity between these associated mental health disorders [American Psychiatric Association (APA), 2013], it is crucial for mental health practitioners to understand the impact of treatment on these specific symptoms. Further, prior meta-analyses have examined these specific outcomes (i.e., Gillies et al., 2012; Gutermann et al., 2016; Morina et al., 2016; Silverman et al., 2008), supporting the examination of these outcome measures.

While prior meta-analyses examined the general efficacy of CBT, there is limited research on the moderating and mediating factors that could impact CBT treatment outcomes for youth exposed to traumatic events. Moderator variables refer to variables that describe the circumstances under which something occurs, and they typically refer to the population or setting in which therapeutic change occurs (Holmbeck, 1997; Silverman & Hinshaw, 2008). Mediators, on the other hand, refer to the mechanisms of change, meaning the variables which cause therapeutic change to occur (Kazdin & Nock, 2003). By examining moderator and mediator variables, it can be determined for whom and under what conditions treatment is effective and change occurs, thus determining generalizability (Holmbeck, 1997; Silverman & Hinshaw, 2008).

One need for this meta-analysis is to address specifically for whom CBT is effective. Table 1 shows a comprehensive summary of the traumatic events that youth were exposed to in prior meta-analyses conducted. Brown and colleagues (2017) examined the moderating effect of

trauma type by study design (i.e., RCT and pre-post) for all psychological treatments, and they found trauma type did not moderate posttraumatic stress symptom outcomes. Additionally, Gutermann and colleagues (2016) found that trauma type did not moderate posttraumatic stress symptom outcomes in their examination of all psychological treatments. Further, Silverman and colleagues (2008) examined the moderating effect of trauma type for all psychological treatments and found that the effects of posttraumatic stress symptoms and depression symptoms for sexual abuse treatment were significantly higher than for other types of trauma. However, one limitation of prior research is that of the meta-analyses that examined only CBT, none examined the moderating effect of trauma type on outcomes. It is important to determine if CBT is effective regardless of the type of trauma the youth was exposed to. Research as shown that individuals have poorer outcomes (e.g., posttraumatic stress symptoms, anxiety symptoms, depression symptoms, externalizing symptoms) when exposed to traumatic events that have an early onset, high duration, are interpersonal in nature, and involve multiple types of trauma (Kliethermes, Schacht, & Drewry, 2014), so it is crucial that mental health practitioners implement effective treatment. The moderating effect of trauma type on posttraumatic stress symptoms, anxiety symptoms, and depression symptoms must be examined to determine if even those exposed to the most deleterious types of traumatic events will achieve positive outcomes through CBT.

To further determine for whom treatment is effective, an examination of the moderating effect of cultural variables (e.g., racial identity, gender, age) is also important. This can be useful for examining cultural responsiveness, which means that treatment is implemented "in a way that acknowledges participants' cultural identity and takes into account their beliefs, norms, and values" (Woods-Jaeger, Kava, Akiba, Lucid, & Dorsey, 2017, p. 231). Unfortunately, research is

not always representative of the populations practitioners work with; the majority of research on mental health outcomes has been with individuals of the "dominant" race and culture, yet it is estimated that soon approximately half of the population will be of Hispanic, African American, Native American, or Asian/Pacific Island descent (Cartledge, Kea, & Simmons-Reed, 2002; Singh, Ellis, Oswald, Wechsler, & Curtis, 1997). Furthermore, rates of problem behaviors vary based on race and context (Yasui & Dishion, 2007). Brown and colleagues (2017) found that age and gender did not moderate posttraumatic stress symptom outcomes in their examination of all psychological treatments for youth exposed to traumatic events. In their study of all psychological treatments for youth exposed to traumatic events, Gutermann and colleagues (2016) found that age moderated posttraumatic stress symptom outcomes, with older youth having larger effect sizes than younger youth. They further found that gender did not moderate posttraumatic stress symptom outcomes. While prior studies examined the moderating effect of the cultural factors of gender, and age on the effectiveness of psychological treatments in general, none of the meta-analyses specifically examined the moderating effect of the cultural variables on youth posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes related to CBT. Silverman and colleagues (2008) as well as Garland, Bickman, and Chorpita (2010) recommended that further research on moderators must occur to increase generalizability.

CBT research has provided evidence of internal validity for use with traumatized populations, and evidence of external validity (e.g., generalizability) too must be established. While the literature has clearly shown that CBT seems to generally work for youth involved in their studies (e.g., sexual assault; Slade & Warne, 2016), the treatment research is normally conducted in highly controlled settings (e.g., laboratories, clinical research facilities) with

rigorous methodologies (e.g., randomized controlled trials [RCTs]) to ensure treatment efficacy. As can be seen in Table 1, there have been multiple meta-analyses which examined treatment efficacy using RCTs (Cary & McMillen, 2012; Gillies et al., 2012; Kowalik et al., 2011; Morina et al., 2016; Silverman et al., 2008; Slade & Warne, 2016). Such studies can prove efficacy by showing improved outcomes between a treatment and a control group (Chorpita & Regan, 2009; Kratochwill & Shernoff, 2003), but generalization of these studies to everyday life is limited because research conducted in highly controlled environments is not conducive to the individualization that occurs in treatment and this limited individualization not preferred by clinicians (Chorpita, Daleiden, & Weisz, 2005). Additionally, CBT is manualized in nature, so there is an assurance with RCTs that every youth receiving CBT is provided the same aspects of treatment every time it is implemented. Unfortunately, strict adherence to a manual is not necessarily guaranteed in the real world since research has found that therapists were concerned about the influence of manuals on individualization of treatment and therapeutic rapport (Chorpita, Daleiden, & Collins, 2014).

Evidence is needed on CBT's effectiveness when applied in naturalistic settings for assurance of its positive impact on youth outcomes (Garland et al., 2010). While some prior meta-analyses have examined less strict study designs (e.g., pre-post, quasi-experimental; Brown et al., 2017; Dorsey et al., 2017; Gutermann et al., 2016; Harvey & Taylor, 2010) in more naturalistic settings (e.g., schools, community clinics; Dorsey et al., 2017; Gillies et al., 2012; Harvey & Taylor, 2010), only Harvey & Taylor (2010) examined the moderating effect of study design. They found that experimental studies had higher effect sizes than quasi-experimental and uncontrolled studies. This study generalized the effect to all psychological treatments rather than purely examining CBT; no studies examined the moderating effect of study setting for CBT.

Further, only one study (Harvey & Taylor, 2010) examined treatment setting specifically, and they found that setting did not moderate posttraumatic stress symptom outcomes for psychological treatments. Additionally, Brown and colleagues (2017) found that teachers implementing treatment had lower posttraumatic stress symptom effect sizes than other professionals implementing psychological treatments. Thus, while there is ample evidence for treatment efficacy in clinic settings, treatment effectiveness in more naturalistic settings is not as certain and understanding these moderating factors on posttraumatic stress symptoms, anxiety symptoms, and depression symptoms can help practitioners determine which line of treatment to use.

An examination of the mediating variables of treatment are also important to understand in treatment research, and to do so, one must examine the components of treatment that cause change. While a variety of treatments are available to mental health professionals, efficacious treatments should be implemented to ensure positive youth outcomes, and these treatments should address the multidimensional challenges associated with traumatic event exposure. CBT is a treatment that addresses the etiological factors (i.e., biological, psychological, ecological) that are associated with negative outcomes. CBT consists of multiple components, including psychoeducation, cognitive processing of thoughts and beliefs, relaxation/coping skills training, and imaginal exposure (Ramirez de Arellano et al., 2014; Silverman et al., 2008); these various components address the complex challenges created by exposure to traumatic events. For example, ecological factors are addressed through psychoeducation with both the youth and the parents, while biological factors are addressed through the instruction of relaxation/coping skills training and the imaginal exposure (i.e., desensitization), and psychological factors are addressed through cognitive processing.

The use of all these CBT components appears to be a necessary factor for effective treatment, as seen through Table 2. The most common CBT treatments studied are TF-CBT and cognitive behavioral intervention for trauma in schools (CBITS). Cary and McMillen (2012) examined both TF-CBT and CBITS in their meta-analysis while Slade and Warne (2016) specifically examined TF-CBT, and they found the treatment to be effective for traumatized youth as measured by global, internalizing, externalizing, sexual, and parent report outcomes. However, as can be seen in Table 3, there are several other treatments available that use the components of CBT. The CBT meta-analyses that limited their examination to only TF-CBT and/or CBITS did not examine these other potentially effective treatments that use CBT techniques to promote positive outcomes. As Garland and colleagues (2010) noted, research needs to be conducted on the treatment processes and outcomes to determine treatment impact. Additionally, Kazdin (2008) noted that research needs to examine the processes in treatment that cause, not simply correlate, with outcomes. A meta-analysis could provide seminal information on the similarities and differences between CBT-only treatments and CBT treatments that include other treatment components (e.g., narrative therapy techniques) through a separation of CBT data by treatment manual (e.g., TF-CBT vs CBITS), which was missing in the prior meta-analyses since they only looked at one specific treatment manual (e.g., TF-CBT) or aggregated the CBT data..

The mediating effect of other treatment components also needs to be examined to determine which aspects of CBT are necessary for positive outcome change in traumatized youth. Some, but not all, CBT manuals include a parental component to treatment to allow for reinforcement and generalizability of skills to settings outside the treatment setting. Silverman and colleagues (2008) examined the mediating effect of parental involvement in all

psychological treatments, and they found that while parental involvement did not moderate posttraumatic stress symptoms, parental involvement in treatment had larger effects on depression symptom and anxiety symptoms than no parental involvement. Harvey and Taylor (2010) also found that family involvement in treatment resulted in higher effect sizes than no use of family in psychological treatments as measured by posttraumatic stress symptoms. Similarly, Gutermann and colleagues (2016) found psychological treatments with parental involvement had larger effects as measured by posttraumatic stress symptoms than those without parents. None of the meta-analyses examined the mediating effect of only CBT on youth outcomes. A thorough analysis of the type of treatment and treatment components provided through a meta-analysis would support the use of all the CBT modules and could help practitioners determine if parental involvement would be best for their traumatized youth by treatment outcome (i.e., posttraumatic stress symptoms, anxiety symptoms, depression symptoms).

Treatment delivery (e.g., group, individual) is another mediating factor that needs to be further examined in the literature. Past research has shown that group treatment had lower posttraumatic stress symptom effect sizes than individual treatment for overall psychological treatments (Brown et al., 2017; Gutermann et al., 2016). However, the mediating effect of treatment delivery has not been examined for CBT in relation to posttraumatic stress symptoms, anxiety symptoms, and depression symptoms. Additionally, some other variables that were found to not mediate psychological treatments that were examined in prior meta-analyses include session number (Brown et al., 2017; Harvey & Taylor, 2010) and session length (Harvey & Taylor). However, as these meta-analyses did not examine CBT specifically, an analysis of these variables as measured by posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes would add to the current literature.

Overall, this meta-analytic review of the CBT literature for youth examined the moderating and mediating factors of treatment (see Table 4) by empirically evaluating the current evidence base regarding CBT efficacy versus effectiveness, thus filling the current gaps in the CBT treatment literature for youth exposed to traumatic events. It examined for whom CBT is an effective treatment and under what conditions CBT is effective. This, in turn, could provide researchers with new avenues to explore in the CBT literature and it could strengthen research methodology and design through the inclusion of groups who were not included in prior research. For mental health practitioners, such as school psychologists, this meta-analytic review would provide the current state of evidence for CBT use with potentially traumatized youth from a variety of backgrounds in various contexts.

It should be noted that not all youth exposed to traumatic events present with symptoms severe enough to meet criteria for PTSD or other traumatic stress-related disorders (Carter, 2007), but still experience levels of distress that impact their well-being. For example, in both Silverman and colleagues' (2008) meta-analysis and Dorsey and colleagues' (2017) meta-analysis, participants were included in the studies if the youth were exposed to traumatic events, and PTSD diagnoses were not a prerequisite. This meta-analysis also examined youth who have not necessarily been diagnosed with PTSD but experience negative symptoms due to their exposure to traumatic events.

CHAPTER 2

LITERATURE REVIEW

In order to address the need for this meta-analytic study, the following sections provide a foundational review of the literature: 1) the definition and prevalence of trauma, 2) the social-emotional-behavioral outcomes for youth exposed to traumatic events, 3) defining what makes a treatment evidence-based, 4) the theoretical basis of cognitive behavioral therapy (CBT), 5) CBT as a child mental health treatment, 6) the need for meta-analysis, and 7) the current research on moderators and mediators of CBT with youth who have experienced traumatic events.

Defining Trauma and Trauma Prevalence

The Substance Abuse and Mental Health Services Administration (SAMHSA, 2014) defines a traumatic event as "an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life threatening and that has lasting adverse effects on the individual's functioning and mental, physical, social, emotional or spiritual well-being" (p. 7). There are a variety of traumatic events ranging from non-interpersonal events to interpersonal events and chronic events to acute events. A non-interpersonal event does not involve an individual intentionally harming another individual (e.g., medical procedure, car accident, natural disaster) whereas an interpersonal event occurs between individuals and can sometimes involve a malicious intent to inflict harm upon an individual (e.g., sexual abuse, physical abuse, traumatic loss; Lilly, Valdez, & Graham-Bermann, 2011). An acute event is a one-time event whereas a chronic event is one in which exposure to the trauma occurs repeatedly over time.

It is important for practitioners and researchers to know and study the impact of trauma and evidence-based treatment for youth because of the high prevalence rates of traumatic

exposure. Finkelhor, Ormrod, and Turner (2007) found in their study of a national sample of youth that 71% of children in their sample were victimized within the past year. Recognizing that there are a variety of traumatic events a youth can be exposed to and the rate at which these events occur can help practitioners identify potentially traumatized youth who might need treatment. In their nationally sampled study of traumatic event prevalence, McLaughlin and colleagues (2013) found that almost 62% of youth were exposed to a traumatic event (i.e., interpersonal violence, accident, network/witnessing an event) at least once in their lives while Ford and colleagues (2010) found that 83% of their nationally representative sample experienced at least one traumatic event. With such high prevalence rates, appropriate treatments are needed to reduce the likely high prevalence of negative outcomes that might occur due to traumatic exposure.

Outcomes for Traumatized Youth

Finkelhor, Ormrod, and Turner (2007) found that polyvictimization correlated with negative outcomes and trauma-related symptoms. Additionally, chronic and interpersonal trauma is associated with detrimental outcomes (Kliethermes, Schacht, & Drewry, 2014). As seen in Figure 1, there are various etiological factors, such as biology, to consider when examining outcomes for youth exposed to traumatic events. The biological model, as described by Ford (2015), explains the symptoms that occur in youth exposed to traumatic events. The amygdala, which is the part of the brain associated with emotions and is connected to the hormonal stress system and memory system, is the "alarm center." After exposure to traumatic events, the amygdala (i.e., the alarm center) is hyperactivated, so that any potentially dangerous event can be detected. This means that the brain is constantly in a state of physiological and emotional arousal to prevent harm from occurring to the individual, and this hyper-vigilance and more easily

trigged survival instinct can result in some of the behavioral symptoms that are seen. On the flip side, hypoarousal can occur, which is when others see the youth engaging in emotional numbing or dissociation. In a non-traumatized brain, the amygdala reacts to challenges and opportunities by storing and retrieving relevant information and memories to engage in appropriate cognitions and behaviors; however, in the brain of a youth exposed to traumatic events, survival and threat-related memories are at the forefront, so they are more likely to access this information.

While most youth exposed to traumatic events do not end up meeting diagnostic criteria for PTSD (Alisic et al., 2014), the outcomes for youth exposed to traumatic events is poorer than for youth who do not experience a traumatic event (Carter, 2007). Social-emotional functioning can be negatively impacted by trauma, and consequently, behavior may be affected. However, because trauma can manifest as either internalizing or externalizing behaviors, simply looking for obvious behavioral symptoms, such as avoidance, is not enough. Instead, one must look for both physical symptoms and affective symptoms (Little & Akin-Little, 2013). For example, hyper-vigilance, which is when a youth is constantly alert because her or his brain is looking to identify and process threat, may occur. However, this can look like inattention, leading to misdiagnoses of attention deficit hyperactivity disorder (ADHD). Posttraumatic stress disorder (PTSD) specifically is generally associated with symptoms of re-experiencing (e.g., nightmares and flashbacks), avoidance and numbing (e.g., being unable to recall the traumatic memories, restricted affect), and hyper-arousal (e.g., insomnia, poor concentration; Carrion, Wong, & Kletter, 2013). Hyperarousal looks like disturbed sleep, high levels of irritability, fussiness and temper tantrums, constant alertness to potential danger, an exaggerated startle response, poor concentration, and hyperactivity (De Young, Kenardy, & Cobham, 2011), which is also similar to the symptoms of ADHD or other executive functioning disorders. There are also overlapping

symptoms between posttraumatic stress-related disorders, depression-related disorders, and anxiety-related disorders. Furthermore, there is typically comorbidity between these three disorders (APA, 2013).

De Young and colleagues (2011) go into detail about the symptoms associated with trauma in young children, which is relevant because young children are at high risk of experiencing maltreatment, with 56% of victims being under the age of seven. Young children express themselves differently from adolescents or adults, since they do not have the language skills or cognitive awareness that adolescents or adults can use to verbalize their experiences and concerns. Young children can re-experience trauma through posttraumatic play, intrusive recollections of the trauma, and distressing nightmares. While intrusive recollections of the trauma can occur at any age, young children experience it slightly differently, and may end up expressing this experience through play. Also, while distressing nightmares are not exclusive to young children, it is an important way of recognizing the fear that the child is facing. Avoidance may also occur in young children, which is witnessed through avoiding exposure to anything that may remind the child of the trauma, social withdrawal, and restricted exploratory behavior and play (De Young et al., 2011). As a coping mechanism, the young child will avoid any situation that might expose them to reminders of the traumatic event, and restricted behavior and play may be limited to behavior and play surrounding the events of the trauma. A young child is also more likely to display behaviors such as fussiness and temper tantrums; a child's level of overall aggression is likely to increase due to trauma. While a child who is being fussy may be viewed as "being difficult", individuals interacting with the child should look more into the function of the behavior. Also, as was mentioned, hyper-vigilance and difficulties with concentration may

occur because the child is on constant alert for threat; this will pull the child's focus away from tasks they should be completing, such as academic tasks.

Research has indicated that childhood adversity and trauma is associated with other mental health disorders, such as mood disorders, anxiety, substance use, and is also associated with disruptive behaviors, and health risk behaviors, such as smoking and suicide attempts in adulthood (De Young et al., 2011). Not only are the short-term effects of trauma detrimental, but the long-term effects of traumatic events can cause further distress to the adolescent and can even be deadly. The effects of trauma do not suddenly disappear after childhood, and if not treated appropriately, they will last into adulthood. This can then affect not only levels of distress, but general functioning. As such, examining potentially comorbid mental health symptoms (e.g., anxiety symptoms, depression symptoms) in addition to posttraumatic stress symptoms when determining impact of treatment on outcomes is necessary.

Another factor to consider when thinking about outcomes is potential risk factors that can further intensify the negative outcomes of traumatic exposure. For example, being from a low socioeconomic status (SES) background can amplify the effects of trauma, and about 20% of youth in the United States live in poverty and 46% live in stressful housing situations (Federal Interagency Forum on Child and Family Statistics, 2013). Furthermore, poverty rates are higher for racial minority youth than racial majority youth (Macartney, Bishaw, & Fontenot, 2013), and youth from low-income and racial minority families are more likely to experience a higher number of traumatic events (United States Department of Health and Human Services [HHS], 2013). Additionally, Roberts, Gilman, Breslau, Breslau, and Koenen (2011) found that adults of racial majority backgrounds sought out treatment at higher rates than those of racial minority backgrounds, meaning that the individuals who are more likely to be affected by trauma are the

least likely to receive the services they need to reduce their negative outcomes. Because of these poor outcomes, it is important to recognize the symptoms of trauma to provide the youth with the treatment that is needed.

Defining What Makes Treatments Evidence-Based

To ensure a treatment will work for the individual it is being used with, there must be research supporting its efficacy and effectiveness. To prove intervention efficacy, studies are conducted in controlled settings, such as laboratories or clinical research facilities, and they use strong and precise methodology (Kratochwill & Shernoff, 2003). Efficacy-based research, research designed and conducted in a laboratory setting, promotes internal validity of study findings due to rigorous methodology (Chorpita, Daleidan, & Weisz, 2005). Such research is typically conducted using randomized controlled trails (RCTs) that show how one treatment works better than another through comparison groups. For a treatment to be considered *efficacious*, replication is key. To be considered efficacious, treatment must show positive effects in at least two studies conducted by independent research teams (Chambless & Hollon, 1998). If treatment efficacy has only been shown through one study or one research team conducted all the treatment research, the treatment is labeled as *possibly efficacious*. The two levels were updated to four in Silverman and Hinshaw's (2008) article (i.e., well-established, probably efficacious, possibly efficacious, experimental), and Southam-Gerow and Prinstein (2014) added one additional, lower level (i.e., tested). All these levels refer to the levels of efficacy of treatment based on available research.

However, even if a treatment is proven to be efficacious, that does not necessarily mean it is effective. Ingraham and Oka (2006) noted there is typically "more research on the *efficacy* (studied in highly controlled situations) of interventions than on their *effectiveness* (implemented

in natural contexts)" (p. 130). Without treatment effectiveness research, it is not evident if a treatment will be effective in real world settings (i.e., external validity), like in schools or non-laboratory clinics. Effectiveness research also provides information on the feasibility of treatment use (i.e., if it works in practice). For clinicians, however, there are a variety of factors that must be considered when determining treatment effectiveness since most of the research is on treatment efficacy. In order for a clinician to determine if an evidence-based treatment will actually be effective in practice, they must recognize whether or not the research demographics reflect client demographics, if the treatment is replicable according to the manual/research procedures, if the conditions of implementation (e.g., length, frequency, location of sessions) are the same as the research, and if the clinician's training is similar to the training described in the study (Kratochwill & Shernoff, 2003). Research must reflect that the treatment is both efficacious and effective by examining these conditions. This can help determine if a treatment is evidence-based.

A treatment that is evidence-based is one which provides strong evidence of efficacy (studied in highly controlled settings such as clinics with control groups) and effectiveness (implemented in natural contexts, as when examining treatment outcomes in schools; Ingraham & Oka, 2006; Kratochwill & Shernoff, 2003). However, generalization of treatment efficacy and effectiveness is limited to the samples studied. As Chambless and Hollon (1998) noted, researchers must clearly define the populations that were examined in the research and this can help determine if a treatment is efficacious or effective for a specific population. Furthermore, to classify treatment as evidence-based, practitioners and researchers examining the research base need to be able to answer the question "for whom and under what condition is the treatment found to be effective." This is a critical question as it impacts the transportability of the treatment

to other settings and the generalizability of the treatment to populations beyond those that were examined in research studies (Ingraham & Oka, 2006). This then provides the best internal and external validity for treatment outcome studies.

As noted earlier, psychological treatments, as opposed to other treatments (i.e., psychotropic medication), should be the first line of treatment for youth exposed to traumatic events (Motta, 2015). Of the evidence-based treatments available for mental health issues, cognitive behavioral therapy (CBT) has been found to be an effective treatment for youth with various mental health issues (e.g., PTSD, anxiety, depression; Kendall & Choudhury, 2003).

Theories Behind Cognitive Behavioral Therapy

CBT consists of psychoeducation, relaxation and coping techniques (e.g., deep breathing, visualization), cognitive training on how to process thoughts and beliefs, and gradual, imaginal exposure (Silverman et al., 2008). This approach has been found to be an effective mental health treatment for youth with varying mental health concerns. As can be seen in Figure 2, CBT is a treatment that focuses on the belief "that the emotional, cognitive, and behavioral elements of psychological problems can mutually influence each other" (Tolin, 2016, p. 13). These elements of psychological problems tie in with the multidimensional etiology associated with trauma (see Figure 1). There are theories that support the multidimensional etiology of trauma and support the various elements of CBT.

Various theories have influenced the development of CBT, including respondent conditioning theory, operant learning theory, social learning theory, bioinformational theory, and information processing theory (Benjamin et al., 2011; Gosch, Flannery-Schroeder, Mauro, & Compton, 2006). According to respondent conditioning theory, a neutral conditioned stimulus is followed by an unconditioned stimulus that causes an unconditioned response (e.g., fear,

anxiety). After repetition of the conditioned stimulus and unconditioned stimulus pairing (i.e., habituation), the conditioned stimulus alone can elicit the unconditioned response. Treatment then tackles this fear response through habituation and extinction. Extinction of the conditioned response occurs through repeated exposure to the conditioned stimulus in the absence of the unconditioned stimulus. Habituation then occurs since the individual is exposed to the feared stimulus (e.g., situational reminders of trauma, memory of the trauma) without harm (Watson & Rayner, 1920). This theory is reflected through the gradual, imaginal exposure component of CBT. However, this theory is not enough to describe the impact of trauma on a child since an acute, one-time event can elicit negative outcomes.

Operant learning theory has also influenced the development of CBT. According to operant learning theory, environmental contingencies influence a youth's behaviors (Skinner, 1969). Thus, reinforcement, whether positive or negative, influences behavior. For example, positive reinforcement may occur if a youth receives attention when engaging in certain behaviors, thus shaping the child to engage in these behaviors to receive attention. On the flip side, individuals in the youth's life may fail to positively reinforce appropriate, desired behaviors. These types of reinforcement behaviors from stakeholders (e.g., parents, teachers) can then shape the youth to engage in behaviors like hypervigilance to threat (Gosch et al., 2006). It is through reinforcement from the mental health practitioner and parent that desired behaviors are increased, and undesired behaviors are reduced.

Social learning theory states that learning occurs through both observation and experience; this implies that fear responses can be learned (Bandura, 1977). This is important because youth may experience a traumatic event with another individual, such as a parent, sibling, or peer, so a youth's self-efficacy to cope with a traumatic event is dependent on both on

the youth's personal experience as well as observations of others' ability to cope with the traumatic event. Teaching and modeling of appropriate coping techniques is thus an important part of CBT as it builds the youth's self-efficacy regarding the use of such techniques (Gosch et al., 2006).

Bioinformational theory states that memory is stored as an image with affect attached to it; the affective image is not purely a raw observation of the event, but rather, it contains interpretive elements like emotions and cognition (Lang, 1977). Thus, through the careful identification of emotions and cognitions surrounding an event, the emotions and cognitions that interfere with functioning can be interrupted. The CBT component of exposure plays a major part in this interruption while also providing habituation of the event so that it no longer provides that sense of fear.

Lastly, information processing theory has influenced the development of CBT. According to information processing theory, "maladaptive anxiety is related to cognitive biases occurring at the level of perception, encoding, interpretation, and retrieval of information" (Gosch et al., 2006, p. 251). Due to processing being biased by these negative cognitions, attention and memory are impacted. This, in turn, causes youth to be hypervigilant towards the detection of potential danger, and it makes it more likely that youth will interpret innocuous events as threatening. CBT focuses on recognizing how one is feeling, what one is thinking, and how one behaves due to activation of fear. It then uses coping mechanisms to help calm the body's response while also using other cognitive tools to reframe maladaptive cognitions. It is through this combined theoretical understanding of emotions, cognitions, and behavior, CBT has developed into a treatment that focuses on these three elements to build youth well-being and functioning.

The Use of Cognitive Behavioral Treatments

The conceptualization of CBT is that the psychological problems associated with traumatic events occur due to both internal and external factors, such as emotions, physiological reactions, cognitions, behaviors, information processing biases, and behavioral skills deficits (Tolin, 2016). To counteract the negative impacts of traumatic events, treatment must address these internal and external factors, which CBT does. For example, research has shown that "intentional effortful appraisal of the personal significance of emotion-eliciting experiences and situations can implicitly reduce emotional arousal and intensity" (Ford, 2015, p. 71). This means that the strong, negative emotions that are associated with inappropriate behaviors and/or harmful cognitions can be limited. Since it is difficult for youth who are emotionally dysregulated to regain control through cognitions (Ford, 2015), emotion regulation through techniques taught in CBT, like deep breathing, play a crucial role in treatment and overall youth outcomes.

Originally, CBT was used to target youth with externalizing behaviors (e.g., aggression; Kendall & Choudhury, 2003). Early CBT models and research targeted impulsivity and self-control (Kendall & Braswell, 1982) and aggression and antisocial behaviors (Tolan, Guerra, & Kendall, 1995). Once CBT was determined to be efficacious for externalizing disorders and concerns, focus of research shifted to using CBT for internalizing disorders. Depression and anxiety were the two internalizing disorders that were examined early on. CBT was found to be more efficacious than systemic behavior family therapy and individual nondirective supportive therapy for youth with depression (Brent, Holder, & Kolko, 1997), and youth with anxiety maintained positive long-term gains after CBT (Kendall & Southam-Gerow, 1996). It was only

after the impact of CBT was examined on these disorders that the focus turned to trauma and its associated disorders (i.e., posttraumatic stress symptoms).

According to the American Psychological Association ([APA], 2008), CBT has been found to be an efficacious psychological treatment for youth exposed to traumatic events. Furthermore, the American Academy of Child and Adolescent Psychiatry ([AACAP], 2010) recommended trauma-focused psychological treatments, such as CBT, be the first line of treatment for youth with PTSD, meaning those who have some of the most severe negative reactions to traumatic event exposure. Additionally, as seen in Table 2, the current literature on CBT for youth exposed to traumatic events has shown that CBT, such as trauma-focused cognitive-behavioral therapy (TF-CBT), is more impactful on various measures (e.g., posttraumatic stress, depression, anxiety) than play therapy, standard community-based therapy, supportive therapy, and no treatment (Borntrager, Chorpita, Higa-McMillan, Daleiden, & Starace, 2013; Brown et al., 2017; Harvey & Taylor, 2010; Silverman et al., 2008; Slade & Warne, 2016). The consensus is that the best evidence-based treatments for youth who have experienced traumatic events are those which use cognitive behavioral techniques in a trauma-focused manner, such as through TF-CBT (Silverman et al., 2008). Prior meta-analyses consolidated the CBT data into CBT versus non-CBT, but they did not go into detail about the CBT subtreatments. For example, treatments such as cognitive behavioral intervention for trauma in schools (CBITS), a cognitive behavioral treatment developed for use specifically in the schools, were listed as possibly efficacious (Silverman et al., 2008), but they have not been compared to other CBT subtreatments. Lastly, prior meta-analyses have not examined the impact of treatments using general cognitive behavioral techniques (e.g., Prolonged Exposure). Understanding the treatment components and what works helps since it informs which processes

cause treatment effects and which do not, which can then be used to make treatment more streamlined and cost effective (Kazdin & Weisz, 1998).

Trauma-focused cognitive behavioral therapy (TF-CBT). TF-CBT is a well-established (Dorsey et al., 2017) manualized evidence-based treatment that can be used with youth who have experienced trauma. TF-CBT was developed by Cohen, Mannarino, and Deblinger (2006), and it "integrates trauma-sensitive interventions, cognitive-behavioral principles, as well as aspects of attachment, developmental neurobiology, family, empowerment, and humanistic theoretical models" (Cohen et al., 2006, p. 32). There are approximately 12 structured child, parent, and conjoint sessions implemented weekly for 90 minutes, a trained therapist goes through eight components of treatment through the PRACTICE model. This PRACTICE model includes: psychoeducation and parenting skills (P), relaxation techniques (R), affective modulation (A), cognitive coping and processing (C), trauma narrative (T), in vivo exposures to the trauma (I), conjoint child-parent session (C), and enhancing safety and future child development (E; Cary & McMillen, 2012; Cohen et al., 2006).

Cognitive behavioral intervention for trauma in schools (CBITS). CBITS is another manualized evidence-based treatment that can be used with youth who have experienced trauma, which has been determined to be probably efficacious (Dorsey et al., 2017). This treatment was developed for implementation in schools. As mentioned previously, research has shown that individuals from racial minority backgrounds are less likely to seek out services (Roberts et al., 2011), but in schools, disparities in mental health service delivery rates can be decreased. This is due to access to youth in the schools, so it is an ideal location for practitioners to implement treatment for youth who have experienced traumatic events.

CBITS was developed to address violence exposure to recent immigrant students between a partnership between the RAND Corporation, the University of California, Los Angeles, and the Los Angeles Unified School District. The treatment was originally developed for youth from fourth through eighth grades, though it has been adapted for older youth. It includes ten group sessions of six to eight youth, one to three individual sessions, and two psychoeducation meetings for parents (Jaycox, Kataoka, Stein, Langley, & Wong, 2012). CBITS consists of many elements like those in TF-CBT. These consistent elements include psychoeducation, relaxation training, recognition and challenging of cognitive distortions, approaching trauma reminders and triggers instead of avoiding them, safety assessment, developing a trauma narrative, and problems-solving (Jaycox et al., 2012). However, CBITS was specifically developed for use in the schools with racial minority students while TF-CBT is typically used in clinical settings. Silverman and colleagues (2008) examined CBT effectiveness for all youth while Slade and Warne's (2016) meta-analysis only examined TF-CBT effectiveness for youth exposed to abuse.

Other treatments that use cognitive behavioral techniques. According to the NCTSN (2018), Blueprints for Healthy Youth Development (2018), and the California Evidence-Based Clearinghouse for Child Welfare ([CEBC], 2018), there are other, lesser known treatments which use cognitive behavioral techniques that also have evidence supporting their use amongst youth with trauma. Table 3 provides a summary of the other lesser known treatments with more a more limited research base that use cognitive behavioral techniques. Prior research has not labeled the evidence base levels (e.g., well-established, probably efficacious, experimental) of studies including these lesser known treatments.

Need for Meta-Analyses

To determine the current state of literature on treatment, meta-analyses are an excellent methodological tool which consolidates data of all the past research on a specific treatment (Lipsey & Wilson, 2000). As noted by Cheung, Ho, Lim, and Mak (2012), a meta-analysis is a method used to combine and compare effect sizes from various related studies; these effect sizes measure the strength and direction of the effect (e.g., treatment effect) of studies. Meta-analyses are important for health care practitioners as it provides a snapshot of the current research, which allows them to stay updated on the current best practices; it also provides systems-level stakeholders and organizations (e.g., APA) evidence for which they can develop practice guidelines (Oxman, Cook, & Guyatt, 1994). Meta-analyses can also help label the level of evidence for a treatment (e.g., well-established, probably efficacious; Southam-Gerow & Prinstein, 2014), and determine treatment generalizability through a thorough examination of the populations studied in the research. The best practices for conducting a meta-analysis is provided through the PRISMA statement (Moher et al., 2009), which lists the expectations for meta-analyses and steps for conducting meta-analyses; by using these guidelines, researchers are likely to find the most accurate effect sizes, thus providing practitioners with the most up to date research. Using these guidelines can also help researchers answer other questions about treatment beyond effect size, such as the variables that impact treatment outcomes.

Research on Cognitive Behavioral Therapy for Children and Adolescents

There is still a great deal of research that needs to be conducted regarding evidence-based treatment, especially regarding culturally competent treatment, and to do so, there needs to be a thorough examination of the moderator and mediator variables (Cohen, Deblinger, & Mannarino, 2018; Silverman et al, 2008). Understanding the moderator and mediator variables that impact

treatment outcomes is important since these variables can play a part in whether a treatment is effective. This, in turn, informs researchers and practitioners if the treatment should be administered to that population or in that setting. Moderators specify the circumstances or conditions under which a specific effect occurs (Holmbeck, 1997). On the other hand, to understand how treatment works, there needs to be an understanding of the mechanisms of change, which refers to the processes that cause therapeutic change (Kazdin & Nock, 2003). Thus, mediation refers to the occurrence of therapeutic change while moderation involves for whom and under what conditions this therapeutic change occurs. In psychological treatment research, the variables that lead to and cause change are called mediators. In their evidence update of psychological treatments for depression, Weersing and colleagues (2017) found that while CBT was the treatment most frequently used and met criteria as a well-established intervention, results were poorer for particular populations and settings (e.g., child guidance clinics). An analysis of the trauma literature regarding CBT outcomes has not yet occurred that examines moderating and mediating factors to have a clearer understanding of for whom CBT works and under what conditions.

Trauma type. Knowing the type of traumatic event a youth experiences is important in understanding the risk for negative outcomes because research has shown that although non-interpersonal trauma is more common, interpersonal trauma is more likely to lead to PTSD symptoms in adults (Kessler, Sonnega, Bromet, & Hughes, 1995). Additionally, although research has focused on acute single traumatic events, chronic events can potentially have a cumulative effect on outcomes (Goenjian et al., 2001; Salloum & Overstreet, 2008). Because of this cumulative effect and the possibility that chronic and interpersonal traumatic events could still be occurring to the youth, there is a chance that treatment may not be as effective for youth

exposed to chronic, interpersonal traumatic events. Research should ideally show that CBT has a positive impact for youth experiencing all types of trauma exposures. Prior research on overall psychological treatments has provided evidence that sexual abuse treatment had higher posttraumatic stress symptom and depression symptom effects than other trauma types (Silverman et al., 2008). Additionally, prior research has specifically examined CBT impact on youth exposed to sexual abuse/assault (Harvey & Taylor, 2010; Slade & Warne, 2016). However, meta-analysis research has not examined the impact of CBT by the type of trauma to which youth are exposed in regard to posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes.

Cultural/demographic characteristics. To ensure that research is generalizable to all populations of youth, it is important that the samples examined in a study reflect the population for which the intervention is meant to be used. Thus, it is important to identify any moderating cultural (i.e., demographic) factors of the groups examined in the literature. The factors that are typically examined are age, gender, socioeconomic status, and race (Nock, 2003); however, this meta-analysis examined some of these factors in addition to other factors that could potentially have a moderating effect on outcomes. An individual's cultural identity is defined by several variables such as race, socioeconomic status, age, and gender (Ingraham & Oka, 2006), so research studies must examine individuals who have diverse cultural factors to determine if there are certain factors that impede or promote treatment efficacy or effectiveness. As mentioned in the introduction, while the moderating effect of cultural factors have been examined in the past, prior meta-analyses have not examined these factors in CBT for youth exposed to traumatic events.

Race. One part of cultural identity is a youth's race. Research has shown that African American, Native American, and Latino youth are more likely to experience traumatic events than European American or Asian American youth (Woodbridge et al., 2016). The majority of TF-CBT studies include data on the racial background of the sample, but most of the youth in the studies were either White/European American or Black/African American (Cohen & Mannarino, 1996; Cohen, Mannarino, & Knudsen, 2004; Cohen, Mannarino, & Iyengar, 2011; Scheeringa, Weems, Cohen, Amaya-Jackson, & Guthrie, 2011). In comparison, CBITS was developed for immigrant youth; there have been studies examining CBITS effectiveness amongst Latino, Native American, and African American youth (Jaycox et al., 2009; Morsette, van del Pol, Schuldberg, Swaney, & Stolle, 2012; Stein et al., 2003). However, the number of youth involved in these studies were small, limiting generalizability. This limited research on racial minority youth is concerning since race is a predictor of treatment engagement; racial minority youth are more likely to drop out of treatment than European American youth, and they are less likely to access mental health services (Atdjian & Vega, 2005; Fraynt et al., 2014). Because of factors such as attrition and buy-in with youth of color, there is a chance that treatment will not be as effective for non-European American youth. Thus, further research is needed to understand the potential moderating effect of race on intervention effectiveness for youth of all racial backgrounds (e.g., African American, Asian American, Arab American, European American, Hispanic/Latino, Native American, youth of mixed racial backgrounds).

Gender. Another part of a youth's cultural identity is their gender. Gender can impact the prevalence of experiencing a traumatic event. For example, prior research has shown that females experienced childhood sexual abuse at higher rates than males, and that females who experienced childhood sexual abuse were more likely to develop PTSD than males who

experienced childhood sexual abuse (Walker, Carey, Mohr, Stein, & Seedat, 2004). Despite the different types of traumatic event exposures by gender, since CBT has been shown to be effective for victims of childhood sexual abuse, it is likely that males and females will both have better outcomes after exposure to treatment. Past research has shown that for overall psychological studies, gender did not moderate treatment outcomes (Brown et al., 2017), but further research needs to examine the impact of gender on CBT posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes.

Age. Yet another important factor in a youth's cultural identity is their age. This is important to consider when implementing treatment since "treatments cannot be applied with equal effectiveness across individuals of all ages" (Kendall & Choudhury, 2003, p. 98). For example, younger children may not have the cognitions necessary to fully access certain components of treatment, thus making it less effective. According to Cary and McMillen (2012), a great deal of the research on TF-CBT and CBITS effectiveness has been conducted with youth aged eight through 14 or 15 years old. Scheeringa and colleagues (2011) implemented TF-CBT with children between the ages of three and six, and Cohen and Mannarino (1996) worked with preschoolers. However, due to small sample sizes, at the time, generalizability of this research was limited. Past meta-analyses have shown mixed information regarding age as a moderator, with Brown and colleagues (2017) finding age did not moderate psychological treatment posttraumatic stress symptom outcomes and Gutermann and colleagues (2016) finding that age did moderate psychological treatment posttraumatic stress symptom outcomes. Further research needs to be conducted to determine the moderating effect of age on posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes.

Study design. Another moderator variable that needs to be examined is the study design. Most research has examined efficacy rather than effectiveness, and while CBT and other evidence-based treatments may be efficacious, it may be difficult to individualize these treatments, thus making them less preferred by therapists (Chorpita, Daleidan, & Weisz, 2005). Research needs to be conducted in less controlled settings to determine if the intervention is effective in practical settings (Nock, 2003). However, conducting such research can be difficult since it involves balancing a strong methodology with research that is acceptable, cost effective, and considers the context of implementation (Kratochwill et al., 2012). A TF-CBT study that evidenced effectiveness was the research conducted by Cohen, Mannarino, and Iyengar (2011). While this was a randomized controlled trial, the treatment was implemented at a women's shelter by social workers. The researchers collected data related to treatment integrity to ensure TF-CBT was implemented with fidelity since the TF-CBT literature showed that when implemented according to the manualized instructions, TF-CBT is beneficial. This study provided a more practical application of TF-CBT, showing effectiveness of the treatment with this population as long as the treatment was followed exactly as prescribed according to the TF-CBT manual. However, as seen in Table 1, only three prior meta-analyses have examined studies beyond RCTs (Brown et al., 2017; Dorsey et al., 2017; Harvey & Taylor 2010), and none of these studies specifically examined the effectiveness of CBT on posttraumatic stress symptoms, anxiety symptoms, and depression symptoms with youth exposed to traumatic events.

Setting. Yet another moderator variable that needs to be examined is the setting in which treatment occurs. For example, a school-based intervention may increase the likelihood of reaching more students due to accessibility and it could reduce the stigma associated with mental health treatment (Myschailyszyn, 2015). However, a clinical setting may provide more control

and may allow for more time for treatment work than a school setting due to the academic commitments a student needs to meet in school. Transportation of treatment across settings requires evaluation (Kendall & Choudhury, 2003). One way of examining this is by looking at TF-CBT literature in comparison to CBITS literature. Since TF-CBT is generally done in a more clinical setting and CBITS was specifically designed to be implemented in a school setting, a comparison of these two types of treatments may shed light on CBT treatment posttraumatic stress symptom, anxiety symptom, and depression symptom outcome differences by location of study implementation (i.e., school vs. clinic setting). Prior research has found setting to not moderate treatment outcomes for overall psychological treatments, but understanding posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes for CBT would further the literature on treatment transportability.

Treatment components. To determine the mechanisms of change, the treatment components for CBT must be examined. It is necessary for practitioners to know exactly which components result in positive outcomes, as it provides crucial information regarding what must be implemented (Kaufman et al., 2005). For example, parental involvement is sometimes a part of CBT. Knowing if youth who have parents involved (i.e., a mediator) in treatment have better outcomes is important as it will inform practitioners about the potential need for parental involvement. Another important component to consider is the trauma narrative exposure (i.e., mediator) component of treatment. While all evidence-based trauma treatments include some form of exposure, in Borntrager and colleagues' (2013) study of clinician-reported therapy techniques, only 14-22% of their youth sample engaged in exposure techniques. Additionally, many youth and parents refuse to engage in treatment that involves a thorough discussion of the traumatic event (Connor, Ford, Arnsten, & Greene, 2015). While prior research has examined

mediators of CBT for adolescents with other mental health disorders (e.g., depression and conduct disorder; Kaufman et al., 2005), no prior meta-analyses has examined the mediating factors of CBT in relation to trauma. While Dorsey and colleagues' (2017) meta-analysis provided a narrative description of the literature available on treatment components, it solely examined the trauma narrative component. This is not sufficient; as Weersing and Weisz (2002) noted, self-talk had a mediating role for certain outcome variables in a CBT anxiety treatment. It is necessary to know if the same is true for CBT trauma treatment. Additionally, while prior meta-analyses have examined mediator variables (e.g., treatment delivery, session number, session length) for general psychological treatments with youth exposed to traumatic events (Brown et al., 2017; Gutermann et al., 2016; Harvey & Taylor, 2010; Silverman et al., 2008), these studies did not examine the mediating effects of these variables for CBT only in relation to posttraumatic stress symptoms, anxiety symptoms, and depression symptoms.

Research Questions

Table 4 lists the moderating and mediating variables investigated to fill in gaps in the current CBT research related to what works for whom under what conditions. This meta-analysis examined who best responds to CBT by examining trauma type, race, gender, and age as moderators of treatment outcomes. Lastly, this meta-analysis expands the current literature by including all treatments using CBT techniques and comparing their impact on posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes. Through a meta-analysis, this study answered the following questions:

1. What is the overall impact of CBT and CBT subtreatments on improving mental health outcomes in children and adolescents?

a. Does CBT reduce symptoms of posttraumatic stress, anxiety, and depression as examined by effect size, when compared to other trauma treatments (e.g., EMDR, play therapy), waitlist controls, or pre-post design?

Based on prior research showing CBT impact over other treatment types (e.g., Slade & Warne, 2016), it was hypothesized that CBT would be more impactful than other trauma treatments or waitlist control groups.

b. Are there any differences in CBT subtreatment impact (e.g., TF-CBT, CBITS) in children and adolescents as examined by the effect sizes of various psychological constructs (i.e., reductions in posttraumatic stress, anxiety, or depression symptoms)?

It was hypothesized that there would be a significant decrease in symptomatology for youth in all CBT subtreatments after exposure to CBT since it has been listed as effective treatment for youth exposed to trauma (APA, 2008) and prior research with diverse samples (Gillies et al., 2012; Gutermann et al., 2016; Kowalik et al., 2011; Silverman et al., 2008) has found CBT to be an effective treatment. It was hypothesized that regardless of CBT subtreatment used, insignificant differences in treatment efficacy would be found. The rationale for this hypothesis is that all the components of CBT that are necessary to address the biological, ecological, and psychological factors impacted by exposure to traumatic events are included in every subtreatment (Gutermann et al., 2016).

2. Are there specific factors that moderate the effectiveness of CBT treatment for children and adolescents?

    a. Does trauma exposure type impact CBT treatment outcomes (i.e., reductions in posttraumatic stress, anxiety, or depression symptoms)?

It was hypothesized that there would be a significant decrease in symptomatology for youth exposed to all trauma types after exposure to CBT since it has been listed as effective treatment (APA, 2008) and prior research with diverse samples (Gillies et al., 2012; Gutermann et al., 2016; Kowalik et al., 2011). Prior research has indicated that trauma type may be a potential moderating factor (Silverman et al., 2008). Thus, it was hypothesized that trauma type would moderate posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes, and sexual abuse/assault would have higher effect sizes than other trauma types.

b. Are there cultural variables (e.g., racial identity, gender, age) that impact CBT treatment outcomes (i.e., reductions in posttraumatic stress, anxiety, or depression symptoms)?

It was hypothesized that there would be a significant decrease in symptomatology for youth of varying racial identities, genders, and ages after exposure to CBT since it has been listed as effective treatment for youth exposed to trauma (APA, 2008) and prior research with diverse samples (Gillies et al., 2012; Gutermann et al., 2016; Kowalik et al., 2011; Silverman et al., 2008) has found CBT to be an effective treatment. Since different cultural populations experience different types of traumatic events, there may be cultural factors that impact treatment outcomes. However, past CBT research (e.g., CBITS; Jaycox et al., 2009; Morsette et al., 2012; Stein et al., 2003) has found treatment to be effective for youth of varying racial identities. Thus, it was hypothesized that treatment would be effective regardless of youth racial background and that there would be significant reductions in outcomes after implementation of treatment. Young children might be less likely to experience the benefits of treatment due to limited cognitive abilities (Kendall & Choudhury, 2003), and prior research has shown older youth had larger

effect sizes than younger youth (Gutermann et al., 2016), so it was hypothesized that older youth would have more positive outcomes from treatment than young children.

c. Does study design (e.g., RCT versus pre-post and quasi-experimental) impact the outcome (i.e., reductions in posttraumatic stress, anxiety, or depression symptoms) for CBT treatments?

It was hypothesized that there would be a significant decrease in symptomatology regardless of study design after exposure to CBT since it has been listed as effective treatment for youth exposed to trauma (APA, 2008) and prior research with diverse samples (Gillies et al., 2012; Gutermann et al., 2016; Kowalik et al., 2011; Silverman et al., 2008) has found CBT to be an effective treatment. Furthermore, past research (Harvey & Taylor, 2010) has shown that pre-post and quasi-experimental studies had lower effects than experimental studies, so it was hypothesized that RCTs would have larger effect sizes than non-RCTs.

d. Does CBT treatment setting (e.g., laboratory/clinic versus school) impact treatment outcomes (i.e., reductions in posttraumatic stress, anxiety, or depression symptoms)?

It was hypothesized that there would be a significant decrease in symptomatology for youth in all treatment settings after exposure to CBT since it has been listed as effective treatment for youth exposed to trauma (APA, 2008) and prior research with diverse samples (Gillies et al., 2012; Gutermann et al., 2016; Kowalik et al., 2011; Silverman et al., 2008) has found CBT to be an effective treatment. Regarding treatment setting, while school settings have benefits (Myschailyszyn, 2015), the clinical setting might provide more time and resources than the school setting. Further, prior research has shown that teachers had lower effect sizes than

other mental health professionals (Brown et al., 2017), so it was hypothesized that school settings would have lower effect sizes than other treatment settings (e.g., clinics).

3. Are there specific factors that mediate the effectiveness of CBT treatment for children and adolescents?
    a. Does parental involvement impact the effectiveness of CBT treatment on mental health outcomes (i.e., reductions in posttraumatic stress, anxiety, or depression symptoms)?

It was hypothesized that there would be a significant decrease in symptomatology for youth with or without parental involvement in treatment after exposure to CBT since it has been listed as effective treatment for youth exposed to trauma (APA, 2008) and prior research with diverse samples (Gillies et al., 2012; Gutermann et al., 2016; Kowalik et al., 2011; Silverman et al., 2008) has found CBT to be an effective treatment. It was hypothesized that specific components of treatment would impact the effectiveness of CBT treatment. Furthermore, it was hypothesized that factors such as parental involvement would be correlated with positive outcomes since prior research has shown that parental involvement had larger effects on depression symptom and anxiety symptom outcomes (Silverman et al., 2008), and treatment with parents had larger effects than treatment without parents (Gutermann et al., 2016)

    b. Are there other mediating factors (e.g., length and frequency of treatment) that impact treatment outcomes (i.e., reductions in posttraumatic stress, anxiety, or depression symptoms)?

It was hypothesized that there would be a significant decrease in symptomatology for youth despite the various mediating factors after exposure to CBT since it has been listed as effective treatment for youth exposed to trauma (APA, 2008) and prior research with diverse samples

(Gillies et al., 2012; Gutermann et al., 2016; Kowalik et al., 2011; Silverman et al., 2008) has found CBT to be an effective treatment. Since prior research has found individual treatment to have higher effect sizes than group treatment (Gutermann et al., 2016; Harvey & Taylor, 2010), it was hypothesized that treatment delivery would mediate outcomes. Furthermore, while length and frequency of treatment may allow for more intensive work with youth, prior research has shown these factors do not mediate treatment outcomes (Harvey & Taylor, 2010). Thus, it was hypothesized that while these factors would be correlated with positive outcomes, they would not mediate treatment outcomes.

CHAPTER 3

METHODS

The current study used a meta-analysis to investigate the impact of cognitive behavioral therapy (CBT) on youth outcomes, and the moderating and mediating variables of treatment. While empirical research studies involve working with participants for data collection purposes, a meta-analysis involves collecting past studies as secondary data and synthesizing this data (Lipsey & Wilson, 2000). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009), a set of itemized guidelines aimed to assist researchers in conducting systematic reviews and meta-analyses, were used in the writing of this dissertation study.

Literature Search

In order to conduct a comprehensive literature search and find an appropriate number of studies for meta-analytic purposes, a thorough search of relevant databases for studies that met inclusion criteria was completed (Lipsey & Wilson, 2000). For the purpose of this meta-analysis, the following databases were searched: PsycINFO, EBSCO, ERIC, and ProQuest Dissertations and Theses. ProQuest Dissertation and Theses was included for the purpose of finding any unpublished studies that may be relevant for the purposes of this study.

From these databases, the following key words were used in the literature search:

1. child* OR adolesc* OR youth OR teen* OR pediatric OR young
2. PTSD OR posttrauma* OR post-trauma* OR “post trauma*” OR trauma*
3. “cognitive behavior*” OR CBT OR treatment OR intervention OR therapy OR psychotherapy

4. “physical* abuse*” OR “physical violence” OR neglect OR maltreat* OR mistreat* OR “domestic violence” OR “child* abuse*” OR “sexual* abuse*” OR fire OR explosion OR refugee OR war OR hurricane OR tsunami OR tornado OR earthquake OR flood OR “natural disaster” OR terror* OR shooting OR massacre OR kidnap* OR witnes* OR victim OR “adverse childhood”

Each asterisk above indicates that all terms with that root were utilized as a keyword. Furthermore, the reference sections of articles found through the keyword search were examined to identify other potential studies. Prior meta-analytic studies’ reference sections were also examined. Lastly, direct requests via email were sent to 14 prominent researchers in the field of CBT among youth exposed to traumatic events to find studies that have not yet been, or will not be, published. A researcher was considered prominent if they designed the specific subtreatment or if they had at least two studies of CBT for youth exposed to traumatic events published. As seen in Figure 3, the initial search produced 22,334 articles, of which 3,062 were duplicates. Eighteen relevant articles were found outside the initial search through examining the references of prior meta-analyses (k = 3) and included research studies (k = 15). No articles were included due to the communications with researchers.

Inclusion criteria. To be included in this study, articles needed to: (a) contain original data (i.e., be a treatment outcome study, not a description of treatment and not a literature review of treatment); (b) involve individuals 18 years or younger in the study sample; (c) involve participants who have been exposed to traumatic events; and (d) involve treatment that uses cognitive behavioral techniques (i.e., psychoeducation, relaxation and coping techniques, cognitive training, and gradual, imaginal exposure). All components of CBT had to be included to be included in the study, as seen per Figure 3. If a study only examined certain pieces of

cognitive behavioral techniques, such as engagement in only cognitive therapy approaches, this was excluded from the meta-analysis. Studies examining both efficacy (i.e., RCTs) and effectiveness (i.e., naturalistic, pre-post design) were included in the meta-analysis. Only articles written in English were included in this meta-analysis. Articles included were not limited to a specific time period. The PsycINFO search resulted in studies from 1907 onwards, the EBSCO search resulted in studies from 1918 onwards, the ERIC search resulted in studies from 1969 onwards, and ProQuest Dissertations and Theses search resulted in studies from 1953 onwards.

Ninety-four articles met all criteria for inclusion in the meta-analysis. Three of the 94 studies involved more than one relevant comparison group in relation to the purpose of this meta-analysis, resulting in three of the studies contributing a second effect size estimate. Each effect size estimate was independent of the others. Thus, the equivalent of the total sample of 97 effect sizes (i.e., distinct data points from 94 studies) were available for the meta-analysis. In Jaycox and colleagues' (2010) study, two separate treatments associated with cognitive behavioral treatment (i.e., TF-CBT and CBITS) were used, and thus this study was treated as two separate studies. Deblinger and colleagues' (1996) study was treated as two separate studies because one treatment group included parental involvement and the other group did not have parental involvement. Similarly, King and colleagues' (2010) study was treated as two separate studies because one treatment group included parental involvement and the other did not have parent involvement. Of the 97 data points from 94 studies, 95 had posttraumatic stress symptom outcome data, 39 had anxiety symptom outcome data, and 65 had depression symptom outcome data. While a number of the included studies had data regarding other outcome variables (e.g., externalizing symptoms, emotion regulation), only posttraumatic stress symptom, anxiety symptom, and depression symptom data were investigated within this meta-analytic study.

Data Coding

All data coding procedures were tracked using the PRISMA flowchart (see Figure 3) and Microsoft Excel. The data coding involved two steps. In the first step, an initial search and screening was completed by the primary author to exclude studies that did not meet inclusion criteria, as seen in Figure 3. To do so, the article title and abstract were read. A random selection of 10% of the articles found were examined by a second coder to determine if they met inclusion criteria for inter-rater reliability purposes without correction for chance agreement. There was 99% agreement between raters. Areas associated with disagreement included incorrectly labeling a study as a treatment study when it was a literature review, incorrectly identifying a treatment as CBT, and disagreement about sample age. Reasons for exclusion from the meta-analysis, such as noting that the study did not include youth or study did not involve trauma, were noted. Studies that appeared to meet inclusion criteria were coded independently by the primary author and a second coder for accuracy and reliability purposes. The articles to be included in the study were coded using a coding sheet in Microsoft Excel. Data coded for studies meeting inclusion criteria included variables such as type of analysis, demographic data, information on the youth outcomes, type of treatment, and type of study (i.e., clinical versus naturalistic). The data coding manual is attached in Appendix B. A random selection of 10% of the articles that were to be included in the meta-analysis were coded by the second coder for inter-rater reliability purposes. There was 96% agreement between raters. In instances where disagreement occurred, analysis of the pattern of differences and discussion resulted in resolution. Areas associated with the disagreement included mislabeling of the comparison group, disagreement with the type of study design, and specifics regarding trauma type.

Measures used to determine change. Youth mental health functioning and behavior changes for trauma treatments were measured diversely across studies. A variety of mental health constructs including posttraumatic stress symptoms, anxiety symptoms, and depression symptoms, and a diverse group of measures used across studies were used to answer research question 1. Table 8 shows the specific outcome measures used and the specific study that used the outcome measure to determine the impact of CBT on mental health functioning. Self-report measures were typically used in the treatment studies; if a self-report measure was not used, a parent report was used.

To highlight the diversity of outcome measures used across studies, the following were those used to measure posttraumatic stress symptoms: Anxiety Disorders Interview Schedule for DSM-IV (Silverman & Albano, 1996), Child and Adolescent Trauma Screen (Sachser et al., 2017), Child Post-Traumatic Stress Disorder Reaction Index (Pynoos et al., 1987), Child PTSD Symptom Scale (Foa et al., 2001), Child Report of Post-Traumatic Stress Symptoms (Greenwald & Rubin, 1999), Child Revised Impact of Events Scale (Smith et al., 2003), Child Stress Scale (Lipp & Lucarelli, 1998), Children's Impact of Event Scale – Revised (Wolfe et al., 1991), Children's Post-Traumatic Stress Reaction Index (Nader & Fairbanks, 1994), Clinician-Administered PTSD Scale – Child and Adolescent Version (Nader et al., 1994), Diagnostic Interview Schedule for Children (Shaffer et al., 2000), DSM-III-R PTSD Symptoms (APA, 1987), DSM-IV Interview (APA, 2003), Impact of Events Scale – Revised (Weiss, 2004), Post-Traumatic Stress Symptoms in Children (Ahmad et al., 2000), Preschool Age Psychiatric Assessment (Egger et al., 2006), Schedule for Affective Disorders and Schizophrenia for School-Age Children (Kaufman et al., 1997), Trauma Symptom Checklist for Children (Briere, 1996), Trauma Symptom Checklist for Young Children (Briere, 2005), UCLA PTSD Reaction Index for

DSM-IV (Steinberg et al., 2004), Young Child PTSD Checklist (Scheeringa et al., 2010), and Youth Self-Report (Achenbach, 1991).

To highlight the diversity of outcome measures used across studies, the following were those used to measure anxiety symptoms: Multidimensional Anxiety Scale for Children (March et al., 1997), Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1985), Screen for Child Anxiety Related Disorders (Birmaher et al., 1999), Spence Children's Anxiety Scale (Spence, 1998), State-Trait Anxiety Inventory for Children (Biaggio & Spielberger, 1983), Trauma Symptom Checklist for Children (Briere, 1996), and Trauma Symptom Checklist for Young Children (Briere, 2005).

To highlight the diversity of outcome measures used across studies, the following were those used to measure depression symptoms: Beck Depression Inventory (Beck et al., 1961), The Behavior Assessment System for Children, 2nd Edition (Reynolds & Kamphaus, 2004), , Center for Epidemiological Studies Depression Scale (Radloff, 1977), Children's Depression Inventory (Kovacs, 1992), Depression Self-Rating Scale (Birleson, 1981), Montgomery-Asberg Depression Rating Scale (Svanborg & Asberg, 1994), Moods and Feelings Questionnaire (Angold et al., 1995), Preschool Age Psychiatric Assessment (Egger et al., 2006), Reynolds Adolescent Depression Scale (Reynolds, 1987), Trauma Symptom Checklist for Children (Briere, 1996), and Trauma Symptom Checklist for Young Children (Briere, 2005).

Moderator and mediator variables. Treatment moderators (e.g., trauma type, race, study design) and mediators (e.g., stakeholder involvement, inclusion of other treatment techniques such as narrative therapy techniques) were coded per the approach described in Appendix B. This coding approach was used to guide the data analysis of potential moderating and mediating effects of treatment. While the terminology and conceptualization of moderators

and mediators were used throughout this paper since it is how it is described in the literature, the analysis for these two factors (i.e., as covariates) were the same, meaning that the distinction between moderators and mediators is purely conceptual, not statistical.

Data Analysis

The data-analysis package, Comprehensive Meta-Analysis, Version 3 (CMA; Borenstein et al., 2005) was used to conduct all analyses. For RCTs, to calculate the standardized mean difference, Cohen's *d*, post-test differences between control and experimental groups were examined using the following formula:

$$d = \frac{\bar{X}_1 - \bar{X}_2}{\mathrm{SD}_{within}}$$

Where $\bar{X}_1$ is the control group mean and $\bar{X}_2$ is the experimental group mean, and SD_{within} is the within groups standard deviation, which were calculated as follows:

$$\mathrm{SD}_{within} = \sqrt{\frac{(n_1 - 1)\mathrm{SD}_1^2 + (n_2 - 1)\mathrm{SD}_2^2}{n_1 + n_2 - 2}}$$

Where n_1 is the sample size of group 1 and n_2 is the sample size of group 2, and where SD_1 is the standard deviation of group 1 and SD_2 is the standard deviation of group 2.

For studies which do not report means and standard deviations and for studies that used designs without a control group, the standardized mean difference were calculated using the *t*-value or *p*-value. These were used to answer research question 1. To find the effect sizes of non-RCT studies, the standardized mean gain score was calculated by dividing the unstandardized mean score (i.e., post-test mean minus pre-test mean) with the pooled SD of pre-test and post-test scores (Littell, Corcoran, & Pillai, 2008).

The random-effects model was used to examine true effect size of each study, and it was calculated as follows:

$$\upsilon_{\theta} = \frac{Q - (k-1)}{\Sigma\omega_i - (\Sigma\omega^2{}_i/\Sigma\omega_i)'}$$

Where Q is the heterogeneity of variance, k is the total number of effect sizes, and ω_i is the inverse of the effect size. The inverse of the effect size is calculated by squaring the standard error to find the variance, and then dividing the variance by 1. The standard error is calculated as follows:

$$\mathrm{SE}_M = \sqrt{\frac{\sigma^2}{k \times n} + \frac{\tau^2}{k}}$$

Where σ is the standard deviation of participants' scores, n is the sample size of each study, and τ^2 is the between-studies variance (Borenstein, Rothstein, Hedges, & Higgins, 2009). Each study's effect size was recorded, and overall effects were calculated through the programming tool Comprehensive Meta-Analysis (Borenstein et al., 2005).

A random-effects mixed-effects model (i.e., meta-regression) was used to examine the moderating and mediating effect on variance. This is calculated through the following:

$$\theta_i = \beta_0 + \beta_1 x_{i1} + \ldots + \beta_{p'} x_{ip'} + u_i$$

Where $u_i \sim N(0, \tau^2)$, and x_{ij} is the value of the *j*th moderator variable for the *i*th study (Viechtbauer, 2010).

Since non-significant study results are less likely to be published than significant study results (i.e., file drawer problem), a forest plot analysis through a fail-safe *N* was calculated to mitigate this effect (Lipsey & Wilson, 2000). This was calculated through the following:

$$k_{\theta} = k\frac{ESk}{ESc} - 1$$

Where *k* is the number of studies found in the meta-analysis, *ESk* is the weighted effect size, *ESc* is the criterion effect size level, and k_0 is the number of effect sizes with a value of zero. Like the other analyses, the forest plot analysis was conducted through CMA (Borenstein et al., 2005).

CHAPTER 4

RESULTS

Specific treatment details of the 94 studies are in Table 7. In the 94 studies included in this meta-analysis, there were a diverse array of samples included (see Table 6). Forty-four studies occurred in the United States while 49 studies occurred internationally. One study did not report location. The international studies occurred in a range of countries including Australia, Brazil, Canada, China, DR Congo, Germany, Greece, Iran, Israel, Japan, Jordan, Nepal, the Netherlands, New Zealand, Norway, Palestine, Rwanda, Scotland, Sri Lanka, Sweden, Tanzania, Thailand, Turkey, the United Kingdom, and Zambia. As the construct of race varies across countries, racial identity was only examined in United States-based samples. Three United States-based studies did not report predominant racial identity data. Of the 41 studies in the United States that reported predominant racial identity data, the predominant race in the sample was Biracial in one study, Black/African American in 14 studies, Hispanic/Latinx in six studies, Native American in two studies, and White/European American in 18 studies. Overall, there were Asian/Asian American participants in seven studies, Biracial participants in 19 studies, Black/African American participants in 38 studies, Hispanic/Latinx participants in 33 studies, Native American participants in 10 studies, and White/European American participants in 34 studies. Twelve studies examined female-only samples, four studies examined male-only samples, and 77 studies examined mixed gender samples. One study did not report gender data. Youth age ranged from three years to 18 years old in the 94 studies.

Meta-Analyses

Standardized mean differences were found for the 97 data points from the 94 studies through the Comprehensive Meta-Analysis statistical software. Table 9 shows effect sizes and

variance data for individual studies that had posttraumatic stress symptom outcome measures, Table 10 shows effect sizes and variance data for individual studies that had anxiety symptom outcome measures, and Table 11 shows effect sizes and variance data for individual studies that had depression symptom outcome measures. Analyses were separated by outcome measure: posttraumatic stress symptoms, anxiety symptoms, and depression symptoms.

Question 1: Overall effect and subtreatment effectiveness. Because higher scores on outcome measures indicate higher symptomatology and lower scores on outcome measures indicate a higher level of functioning, negative effect sizes indicate a better outcome for youth exposed to cognitive behavioral therapies when compared to a control group or pre-treatment outcomes. As seen in Table 12, the overall standardized mean difference indicated a medium effect for posttraumatic stress symptoms (k = 95; d = -0.57; *95% CI* = -0.66, -0.48), and a small effect for anxiety symptoms (k = 39; d = -0.40; *95% CI* = -0.51, -0.29) and depression symptoms (k = 65; d = -0.40; *95% CI* = -0.47,-0.33). Additionally, the p-values for the effect sizes (i.e., the test of the null) were all less than 0.001, meaning that there was a significant difference for treatment outcomes (i.e., posttraumatic stress, anxiety, depression symptoms) between pre-test and post-test and between treatment groups and comparison groups (e.g., waitlist, treatment as usual). Heterogeneity was considered substantial in the effect sizes that examined posttraumatic stress symptoms (I^2 = 85.04*;* Q = 628.35; p < 0.001; k = 95), anxiety symptoms (I^2 = 69.50*;* Q = 124.60; p < 0.001; k = 39), and depressive symptoms (I^2 = 51.36*;* Q = 131.59; p < 0.001; k = 65). This means that 85% of the observed variance in posttraumatic stress symptoms reflects real differences in study effects, 70% of the observed variance in anxiety symptoms reflects real differences in study effects, and 51% of the observed variance in depressive symptoms reflects real differences in study effects. Additionally, because there was statistical significance for the

Q-statistics ($p < .001$), dispersion is likely not due to random error, and there were likely real differences in the study effects. Thus, moderator analyses were used to determine variables that may be impacting outcomes.

Of the 94 studies that produced 97 effect sizes, 78 examined 23 specific subtreatments, and 16 examined general cognitive behavioral treatments. Data included in the narrative summaries are in Tables 6 and 7, and Appendix C provides a detailed narrative summary of the CBT studies included in this meta-analysis. As seen in Table 13, the subtreatments examined for posttraumatic stress symptoms were CBITS ($k = 5$; ; $d = -.53$, $p = .002$), CPC-CBT ($k = 3$; $d = -1.23$, $p < .001$), ERASE Stress ($k = 4$; $d = -.51$, $p = .009$), GB-CBT ($k = 3$; $d = -.38$, $p = .117$), PE-A ($k = 5$; $d = -.46$, $p = .023$), TRT ($k = 12$; $d = -.32$, $p = .009$), and TF-CBT ($k = 28$; $d = -.66$, $p < .001$). The remaining subtreatments were consolidated into the "other" category ($k = 35$; $d = -.56$, $p < .001$) due to small sample sizes. The standardized mean effects ranged from a small to large effect. Based on the results, the mean effects of the subtreatments were not significantly different from one another ($Q = 12.97$, $p = .073$). The subtreatments examined for depression symptom outcomes were CBITS ($k = 5$; $d = -.41$, $p < .001$), TRT ($k = 10$; $d = -.25$, $p = .004$), and TF-CBT ($k = 17$; $d = -.44$, $p < .001$). The remaining subtreatments were consolidated into the "other" category ($k = 33$; $d = -.42$, $p < .001$) due to small sample sizes. The standardized mean effects indicated a small effect size for all subtreatments. Based on the results, the mean effects of CBITS, TRT, TF-CBT, and other treatments on reducing posttraumatic stress and depressive symptoms were not significantly different from one another ($Q = 3.70$, $p = .296$). Subtreatment analyses were not conducted on anxiety symptom outcomes due to the limited number of studies available per subtreatment.

Question 2: Moderator analyses. Table 13 shows the results of moderator analyses. It should be noted that age was conceptualized as continuous. All other moderator variables were conceptualized as categorical. To answer the research questions and determine moderators that may be impacting outcomes, there needed to be at least three effect sizes per category to be included in analyses. For posttraumatic stress symptom outcomes, there were 95 effect sizes in the trauma exposure analysis, 37 effect sizes in the race analysis, 94 effect sizes in the gender analysis, 95 effect sizes in the study design analysis, 94 effect sizes in the treatment setting analysis, 85 effect sizes in the parental involvement analysis, 95 effect sizes in the treatment technique analysis, 89 effect sizes in the treatment delivery analysis, and 95 effect sizes in the session frequency analysis. For anxiety symptom outcomes, there were 39 effect sizes in the trauma exposure analysis, 19 effect sizes in the race analysis, 38 effect sizes in the gender analysis, 39 effect sizes in the study design analysis, 39 effect sizes in the treatment setting analysis, 35 effect sizes in the parental involvement analysis, 39 effect sizes in the treatment technique analysis, and 36 effect sizes in the treatment delivery analysis. For depression symptom outcomes, there were 65 effect sizes in the trauma exposure analysis, 31 effect sizes in the race analysis, 62 effect sizes in the gender analysis, 65 effect sizes in the study design analysis, 65 effect sizes in the treatment setting analysis, 60 effect sizes in the parental involvement analysis, 65 effect sizes in the treatment technique analysis, 62 effect sizes in the treatment delivery analysis, and 65 effect sizes in the session frequency analysis.

Moderator Analyses for Studies with Posttraumatic Stress Symptom Outcomes. The trauma exposures examined were natural disasters (k = 10; d = -.57; p < .001), physical abuse (k = 4; d = -1.42, p < .001), sexual abuse/assault (k = 28; d = -.59, p < .001), single incident trauma (k = 3; d = -1.02, p = .001), terrorism (k = 3; d = -.22, p = .318), traumatic grief (k = 4; d = -.84, p

< .001), various traumas (k = 13; d = -.62, p < .001), violence (k = 3; d = -.58, p = .009), and war-related violence (k = 20; d = -.38, p < .001). The remaining trauma exposures were consolidated into the "other" category (k = 7; d = -.42, p = .008) due to small sample sizes. The standardized mean effects ranged from small to large, and they varied significantly (k = 95; Q = 24.09, p = .004), with terrorism being associated with the smallest effect size and physical abuse being associated with the largest effect size. This indicated that trauma type was a significant moderator variable in reducing posttraumatic stress symptoms. To examine racial identity, the predominant race in the sample was used, and only Black/African American (k = 13; d = -.47, p = .001), Hispanic/Latinx (k = 6; d = -.58, p = .004), and White/European American (k = 18; d = -.63, p < .001) predominant samples were used. The standardized mean effects were in the small to medium range. The mean effect sizes between the racial identities were not significantly different from one another (k = 37; Q = .79, p = .673), so results indicated that race was not a significant moderator variable in reducing posttraumatic stress symptoms. Female-only samples (k = 12; d = -.64, p < .001), male-only samples (k = 4; d = -1.36, p < .001), and mixed gender samples (k = 78; d = -.53, p < .001) were examined in the moderator analyses. The effect sizes were in the medium to large range. They were significantly different from one another (k = 94; Q = 10.68, p = .005), with female-only and mixed gender samples having similar effect sizes and male-only samples having a larger effect size. This indicates gender was a significant moderator variable in reducing posttraumatic stress symptoms. Lastly, age was examined as a moderator through meta-regression analysis, and the results indicated that age was not a significant moderator variable in reducing posttraumatic stress symptoms (k = 94; R^2 = -.006, p = .755). The study designs examined in the moderator analyses were pre-post (k = 48; d = -.62, p < .001), quasi-experimental (k = 8; d = -.64, p < .001), and RCT (k = 39; d = -.48, p < .001) designs. The

effect sizes were in the small to medium range, and they were not significantly different from one another (k = 95; Q = 2.21, p = .331). The settings examined in the moderator analyses were clinic (k = 3; d = -.66, p = .061), community (k = 32; d = -.63, p < .001), hospital outpatient (k = 3; d = -.44, p = .070), school (k = 31; d = -.43, p < .001), and university (k = 3; d = -1.18, p < .001) samples. The remaining settings were consolidated into the "other" category (k = 22; d = -.63, p < .001) due to small sample sizes. The effect sizes ranged from a small to large effect, and they were not significantly different from one another (k = 94; Q = 10.11, p = .072), so results indicated that treatment setting was not a significant moderator variable in reducing posttraumatic stress symptoms.

Moderator Analyses for Studies with Anxiety Symptom Outcomes. The trauma exposures examined were sexual abuse/assault (k = 18; d = -.41, p < .001), single incident trauma (k = 3; d = -.76, p = .005), various traumas (k = 3; d = -.57, p = .011), and war-related violence (k = 6; d = -.20, p = .138). The remaining trauma exposures were consolidated into the "other" category (k = 9; d = -.41, p < .001) due to small sample sizes. The standardized mean effects ranged from small to medium. Based on the results, the mean effects between the different trauma exposures were not significantly different from one another (k = 39; Q = 4.49, p = .344) so results indicated that trauma type was not a significant moderator variable in reducing anxiety symptoms. To examine racial identity, the predominant race in the sample was used, and only Black/African American (k = 3; d = -.35, p = .024), Hispanic/Latinx (k = 4; d = -.31, p = .035), and White/European American (k = 12; d = -.42, p < .001) predominant samples were used. The standardized mean effects were in the small range and they were not significantly different from one another (k = 19; Q = .49, p = .783), so results indicated that race was not a significant moderator variable in reducing anxiety symptoms. Additionally, female-only samples (k = 4; d =

-.55, p = .001) and mixed gender samples (k = 34; d = -.38, p < .001) were the only gender categories examined in the moderator analysis. The effect sizes were in the small to medium range, and they were not significantly different from one another (k = 38; Q = .87, p = .350) so results from these limited samples indicated that gender was not a significant moderator variable in reducing anxiety symptoms. Lastly, age was examined as a moderator through meta-regression analyses, and the results indicated that age was not a significant moderator variable in reducing anxiety symptoms (k = 38; R^2 = -.006, p = .755). The study designs examined in the moderator analyses were pre-post (k = 19; d = -.50, p < .001), quasi-experimental (k = 4; d = -.47, p = .005), and RCT (k = 16; d = -.23, p = .016) designs. The effect sizes were in the small to medium range, and they were not significantly different from one another (k = 39; Q = 4.73, p = .094), so results indicated that study design was not a significant moderator variable in reducing anxiety symptoms. Due to the low sample sizes for various treatment settings (e.g., hospital, residential treatment facility), only community (k = 13; d = -.47, p < .001) and school-based (k = 11; d = -.24, p = .017) samples were used in the moderator analysis. The remaining treatment settings were consolidated into the "other" category (k = 15; d = -.48, p < .001) due to small sample sizes. The mean effect sizes were in the small range, and they were not significantly different from one another (k = 39; Q = 3.92, p = .141), so results indicated that treatment setting was not a significant moderator variable in reducing anxiety symptoms.

Moderator Analyses for Studies with Depression Symptom Outcomes. The trauma exposures examined were natural disasters (k = 7; d = -.46, p < .001), physical abuse (k = 3; d = -.85, p < .001), sexual abuse/assault (k = 21; d = -.37, p < .001), single incident trauma (k = 3; d = -.66, p = .005), terrorism (k = 3; d = -.26, p = .070), traumatic grief (k = 4; d = -.47, p < .001), various traumas (k = 8; d = -.57, p < .001), violence (k = 3; d = -.37, p = .014), and war-related

violence (k = 7; d = -.21, p = 017). The remaining trauma exposures were consolidated into the "other" category (k = 6; d = -.40, p < .001) due to small sample sizes. The standardized mean effects ranged from small to large. The mean effects between the different trauma exposures were not significantly different from one another (k = 65; Q = 14.19, p = .116), so results indicated that trauma type was not a significant moderator variable in reducing depression symptoms. To examine racial identity, only those represented by a reasonable number of studies were included in the analysis, thus only Black/African American (k = 9; d = -.38, p < .001), Hispanic/Latinx (k = 6; d = -.27, p = .017), and White/European American (k = 16; d = -.47, p < .001) predominant samples were used. The standardized mean effects were generally in the small range. The mean effect sizes between the racial identities were not significantly different from one another (k = 31; Q = 2.67, p = .264), so results indicated that race, as reflected in the three ethnic groups available, was not a significant moderator variable in reducing depression symptoms. Additionally, female-only samples (k = 7; d = -.33, p = .001) and mixed gender samples (k = 55; d = -.40, p < .001) were the only ones examined in the moderator analyses. The effect sizes were generally in the small range, and they were not significantly different from one another (k = 62; Q = .63, p = .428), so results from these limited samples indicated that gender was not a significant moderator variable in reducing depression symptoms. Finally, age was examined as a moderator through meta-regression analysis, and the results indicated that age was not a significant moderator variable (k = 64; R^2 = .02, p = .133) in reducing depression symptoms. The study designs examined in the moderator analyses were pre-post (k = 31; d = -.50, p < .001), quasi-experimental (k = 6; d = -.35, p < .001), and RCT (k = 28; d = -.26, p < .001) designs. The effect sizes were in the small to medium range, and they were significantly different from one another (k = 65; Q = 10.95, p = .004), with RCTs having the smallest effect

size and pre-post designs having the largest effect size. This indicated that study design was a significant moderator variable in reducing depression symptoms. Due to the low sample sizes for various treatment settings (e.g., hospital, residential treatment facility), only community (k = 22; d = -.56, p < .001) and school-based (k = 21; d = -.31, p < .001) samples were used in moderator analyses. The remaining treatment settings were consolidated into the "other" category (k = 22; d = -.35, p < .001) due to small sample sizes. The effect sizes ranged from a small to medium effect, and they were significantly different from one another (k = 65; Q = 10.98, p = .004), with school and other settings having similar effects, while community settings had a relatively larger effect. This indicated that treatment setting was a significant moderator variable in reducing depression symptoms.

Question 3: Mediator analyses. Table 13 shows the results of mediator analyses. It should be noted that session length and number of sessions were conceptualized as continuous variables. All other variables were conceptualized as categorical. To answer the research questions and determine mediators that may be impacting outcomes, there needed to be at least three effect sizes per category to be included in analyses. For posttraumatic stress symptom outcomes, there were 94 effect sizes in the age analysis, 64 effect sizes in the session length analysis, and 83 effect sizes in the session number analysis. For anxiety symptom outcomes, there were 27 effect sizes in the age analysis and 33 effect sizes in the session number analysis. For depression symptom outcomes, there were 64 effect sizes in the age analysis, 40 effect sizes in the session length analysis, and 56 effect sizes in the session number analysis.

Mediator Analyses for Studies with Posttraumatic Stress Symptom Outcomes.

Parental involvement examined parents being included in the treatment (k = 50; d = -.60, p < .001) and parents not being included in the treatment (k = 35; d = -.52, p < .001). The effect sizes

for parental involvement were in the medium range, and the effect sizes were not significantly different from one another (k = 95; Q = -.73, p = .689), so results indicated that parental involvement was not a significant mediator variable in reducing posttraumatic stress symptoms. These analyses included treatment that used only CBT (k = 76; d = -.58, p < .001) and treatments that used other techniques in addition to CBT (k = 19; d = -.55, p < .001). The effect sizes were in the medium range, and they were not significantly different from one another (k = 95; Q = .05, p = .831), so results indicated that inclusion of other treatment techniques was not a significant mediator variable in reducing posttraumatic stress symptoms. Treatment delivery was predominantly individual treatment (k = 48; d = -.60, p < .001) or predominantly done in group settings (k = 41; d = -.57, p < .001). The effect sizes were in the small to medium range, and they were not significantly different from one another (k = 95; Q = 2.82, p = .244), so results indicated that treatment delivery was not a significant mediator variable in reducing posttraumatic stress symptoms. Session length was examined as a mediator through meta-regression analyses, and the results indicated that session length was not a significant mediator variable (k = 64; R^2 = -.0007, p = .770), so results indicated that session length was not a significant mediator variable in reducing posttraumatic stress symptoms. Treatment frequency categories included in the mediator analyses were biweekly (k = 5; d = -.17, p = .443), weekly (k = 52; d = -.60, p < .001), and three times a week (k = 4; d = -.47, p = .041). Studies involving other treatment frequencies were consolidated into the "other" category (k = 34; d = -.58, p < .001) due to small sample sizes. The effect sizes were in the small to medium range, and they were not significantly different from one another (k = 95; Q = 3.59, p = .309), so results indicated that treatment frequency was not a significant mediator variable in reducing posttraumatic stress symptoms. Number of treatment sessions was examined as a mediator

through meta-regression analyses, and the results indicated that number of treatment sessions was not a significant mediator variable (k = 83; R^2 = -.01, p = .366) in reducing posttraumatic stress symptoms.

Mediator Analyses for Studies with Anxiety Symptom Outcomes. Parental involvement examined parents being included in the treatment (k = 21; d = -.39, p < .001) and parents not being included in the treatment (k = 14; d = -.37, p < .001). The effect sizes for parental involvement were generally in the small range, and the effect sizes were not significantly different from one another (k = 39; Q = 1.05, p = .593), so results indicated that parental involvement was not a significant mediator variable in reducing anxiety symptoms. These analyses included treatments that either used only CBT (k = 32; d = -.40, p < .001) or treatments that used other techniques in addition to CBT (k = 7; d = -.41, p = .002). The effect sizes were generally small, and they were not significantly different from one another (k = 39; Q = .01, p = .917). Thus, results indicated that inclusion of other treatment techniques was not a significant mediator variable in reducing anxiety symptoms. Treatment delivery was either predominantly individual treatment (k = 21; d = -.44, p < .001) or predominantly done in group settings (k = 15; d = -.44), p < .001. The effect sizes were generally small, and they were not significantly different from one another (k = 36; Q = 3.77, p = .152), so results indicated that treatment delivery was not a significant mediator variable in reducing anxiety symptoms. Session length was examined as a mediator through meta-regression analyses, and session length was not a significant mediator variable (k = 27; R^2 = -.002, p = .601). Therefore, results indicated that session length was not a significant mediator variable in reducing anxiety symptoms. Analyses of the frequency of treatment were not conducted due to the limited number of studies available per category (e.g., weekly, biweekly). However, number of treatment sessions was examined as a

mediator through meta-regression analyses, and the results indicated that the number of treatment sessions was not a significant mediator variable (k = 33; R^2 = -.0009, p = .962) for reduction of anxiety symptoms.

Mediator Analyses for Studies with Depression Symptom Outcomes. Parental involvement examined parents being included in the treatment (k = 32; d = -.48, p < .001) and parents not being included in the treatment (k = 28; d = -.34, p < .001). The effect sizes for parental involvement were generally in the small range, and they were not significantly different from one another (k = 65; Q = 3.49, p = .175). Thus, results indicated that parental involvement was not a significant mediator variable in reducing depression symptoms. These analyses included treatments used only CBT (k = 52; d = -.38, p < .001) and treatments that used other techniques in addition to CBT (k = 13; d = -.48, p < .001). The effect sizes were generally small, and they were not significantly different from one another (k = 65; Q = 1.33, p = .249), so results indicated that inclusion of other treatment techniques was not a significant mediator variable in reducing depression symptoms. Treatment delivery was predominantly individual treatment (k = 30; d = -.40, p < .001) or predominantly done in group settings (k = 32; d = -.38, p < .001). The effect sizes were small, and they were not significantly different from one another (k = 62; Q = 1.75, p = .417). Thus, results indicated that treatment delivery was not a significant mediator variable in reducing depression symptoms. Session length was examined as a mediator through meta-regression analysis, and the results indicated there was no evidence that session length was a significant mediator variable (k = 40; R^2 = -.001, p = .524). Categories for treatment frequency involved in the mediator analyses were biweekly (k = 3; d = -.17, p = .335) and weekly (k = 40; d = -.39, p < .001). The remaining treatment frequencies were consolidated into the "other" category (k = 22; d = -.44, p < .001) due to small sample sizes. The effect sizes were small, and

they were not significantly different from one another (k = 65; Q = 2.21, p = .331), so results indicated that treatment frequency was not a significant mediator variable in reducing depression symptoms. Number of treatment sessions was examined as a mediator through meta-regression analysis, and the results indicated that there was no evidence that number of treatment sessions was a significant mediator variable (k = 56; R^2 = .004, p = .652).

Publication Bias

For the main outcome measure analyses (i.e., posttraumatic stress symptom analyses, anxiety analyses, depression analyses,), visual inspection of the symmetry of the funnel plots, seen in Figure 4, Figure 6, and Figure 7, suggested no publication bias. Further, as seen in Figure 5 and Figure 8, removal of the outliers in the initial funnel plots resulted in a typical level of symmetry, also suggesting no publication bias. Another examination of potential publication bias was conducted through the analysis of fail-safe *N*. As seen in Table 12, there would need to be 7,078 studies with a treatment effect of zero to lead to a nonsignificant overall result for studies with posttraumatic stress symptom outcomes, there would need to be 1,451 studies with a treatment effect of zero to lead to a nonsignificant overall result for studies with anxiety symptom outcomes, and there would need to be 4,411 studies with a treatment effect of zero to lead to a nonsignificant overall result for studies with depression symptom outcomes.

CHAPTER 5

DISCUSSION

This study examined the impact of CBT on treatment outcomes (i.e., reductions in posttraumatic stress symptoms, anxiety symptoms, or depression symptoms) for youth exposed to traumatic events through a meta-analytic design. A total of 94 studies representing 97 treatment effects were analyzed. The effects of moderating and mediating variables on CBT outcome were also examined through this meta-analysis and provide a unique contribution to the prior CBT meta-analytic literature.

Study results indicated that CBT for youth exposed to traumatic events significantly reduces posttraumatic stress symptoms (d = -.57, p < .001), anxiety symptoms (d = -.40, p < .001), and depression symptoms (d = -.40, p < .001) across a diverse array of measures when compared to other trauma treatments (e.g., cue-centered therapy, EMDR) or waitlist control groups. Such improvements in symptoms are consistent with prior meta-analyses of CBT outcome studies specifically examining posttraumatic stress symptoms, anxiety symptoms, and depression symptoms (Gillies et al., 2012; Silverman et al., 2008). Prior research (Gillies et al., 2012) found higher effect sizes for posttraumatic stress symptoms (*SMD* = -1.34) and depression symptoms (*SMD* = -.80). However, due to the small effect sizes in that study (i.e., k = 3), the magnitude of those results may likely be inflated. Contrarily, Silverman and colleagues (2008) found slightly lower effect sizes for posttraumatic stress symptoms (d = .50) and considerably lower effective sizes for anxiety symptoms (d = .15), and depression symptoms (d = .29) than this meta-analysis. Although this meta-analytic study found slightly more positive results than Silverman and colleagues' (2008) study, the findings are fairly similar. In line with previous meta-analyses (e.g., Morina et al., 2016), which showed higher effects for posttraumatic stress

symptoms (i.e., a decrease in symptomatology) than depression symptoms, this meta-analysis provides evidence that mean effects were higher for posttraumatic stress symptoms than other outcomes (i.e., anxiety symptoms, depression symptoms). Consistent with treatment guidelines (e.g., APA, AACAP), CBT with youth exposed to traumatic events is clearly effective in reducing mental health symptoms associated with traumatic event exposure. Findings from this meta-analysis clearly provide further evidence for the impact of CBT on children experiencing comorbid mental health issues (i.e., posttraumatic stress, anxiety, depression symptoms). In sum, youth experiencing a range of traumatic effects can be treated effectively with CBT.

Five prior meta-analyses have examined the impact of CBT on children and adolescents who have experienced trauma. However, those meta-analyses had not examined the possibility of subtreatments differentially impacting posttraumatic stress symptom, anxiety symptom, or depression symptom outcomes (Dorsey et al., 2017; Kowalik et al., 2011; Harvey & Taylor, 2010; Silverman et al., 2008; Slade & Warne, 2016). The results of this meta-analysis suggest CBT subtreatments all positively impacted posttraumatic stress symptoms with one exception. Game-based cognitive behavioral therapy (GB-CBT) did not evidence statistically significant decreases in posttraumatic stress symptoms (p = .117). This could be due to Misurell, Springer, and Tryon's (2011) study, in which there were decreases in posttraumatic stress symptom outcomes, but these decreases were not significant. Given the multitude of available effective CBT treatments, support for using GB-CBT is quite limited. However, this meta-analysis provided ample evidence on TF-CBT, TRT, and CBITS as first-line treatments for youth exposed to traumatic events given the positive impact on primary (i.e., posttraumatic stress symptom) and secondary (i.e., depression symptom) outcomes.

This study is the first appearing in the literature to examine the impact of CBT on a diverse range of moderators (e.g., gender, age, setting,) on a broad set of treatment outcomes (i.e., posttraumatic stress, anxiety, depression symptoms). One moderator examined was trauma type. Trauma type led to differential treatment outcomes for posttraumatic stress symptoms but not anxiety symptoms or depression symptoms. Specifically, of the effect sizes with larger samples, youth who had been sexually abused demonstrated higher treatment effects (d = -.59) compared to other trauma types (e.g., war-related violence). This meta-analysis partially aligns with prior research. For example, in Silverman and colleagues' (2008) meta-analytic study, the overall treatment effect for posttraumatic stress symptoms (d = .43) was lower than for sexual abuse interventions (d = .46). However, this meta-analysis did not separate CBT from non-CBT studies, so these results contribute to the literature by providing more concrete information about treatment effects for CBT by trauma type. While sexual abuse/assault showed a medium effect in this study, implying CBT has a positive impact for youth exposed to sexual abuse/assault, physical abuse had the highest effect, followed by single incident trauma and traumatic grief (see Table 13). Further, there were significant decreases in posttraumatic stress, anxiety, and depression symptom outcomes for youth exposed to most traumatic events, as seen in prior literature (Brown et al., 2017; Gutermann et al., 2016), but trauma type did not moderate anxiety and depression symptom outcomes as anticipated. However, this could be explained by the small sample size and future research may be needed to determine if this result is due to genuine variance or sample size. Further, youth exposed to terrorism did not experience significant decreases in posttraumatic stress symptoms (p = .318) and depression symptoms (p = .070), and youth exposed to war-related violence did not experience significant decreases in anxiety symptoms (p = .138). This can potentially be explained by the small sample sizes for youth

exposed to terrorism. However, it could also mean that CBT may not be the ideal treatment for youth exposed to this type of trauma due to the chronic and potentially current nature of the trauma. Further, traumatic events like war-related violence and terrorism also likely impact others in the youth's life (e.g., parents, siblings, peers) who may not be receiving treatment. This experience of collective trauma could potentially impact treatment outcomes, and future research will be needed to determine the impact of CBT for youth who have experienced these events. However, it should be noted that for youth exposed to war-related violence, there were significant decreases in posttraumatic stress symptoms and depression symptoms, so practitioners should be aware that while CBT may not appropriately address anxiety symptoms, CBT can still be an impactful treatment for youth exposed to war-related violence. Past research has not thoroughly examined anxiety symptom treatment outcomes for youth exposed to traumatic events, so this meta-analysis adds valuable data to the literature for researchers and practitioners.

Study findings indicated that both male and female samples respond positively to CBT. Yet, this meta-analysis identified that for posttraumatic stress symptom outcomes, male-only samples had significantly higher effect size outcomes compared to female-only samples or mixed samples. This conflicts with prior meta-analytic research (Gutermann et al., 2016) that suggested gender does not moderate posttraumatic stress symptom outcomes. However, Lindebø Knutsen and colleagues (2020) found that female samples did not respond to TF-CBT as well as male samples, which may support the more positive posttraumatic stress symptom outcomes for males exposed to CBT in this meta-analytic study. Further, similar to the trauma type data, the gender data that was significantly different had smaller sample sizes, with the four studies examining male-only samples while 12 studies examined female-only samples and 78 studied mixed

samples. It is likely that the sample sizes could be the source of the significant difference in posttraumatic stress symptom effect sizes, so this result needs to be interpreted with caution. Additionally, male-only samples were not examined in anxiety symptom and depression symptom analyses, so further research is needed in relation to anxiety symptoms and depression symptoms to determine if gender may be a moderating variable for male-only samples.

This study also found that one moderator impacting treatment outcomes for depression symptoms was study design. Past research did not examine the impact of study design on depression symptom outcomes, so this meta-analysis contributes to the literature by providing evidence of the moderating effect of study design on depression symptom outcomes. However, it was hypothesized that RCTs would have a larger effect than non-RCTs since Harvey and Taylor (2010) found that pre-post and quasi-experimental studies had significantly lower effects on posttraumatic stress symptoms than experimental studies. The findings of this meta-analysis conflict with those findings since pre-post and quasi-experimental studies had higher effects than RCTs. One explanation for this outcome is that non-RCTs may provide the opportunity for practitioners to be more individualized and less strict with the implementation of treatment (Chorpita et al., 2005), which may explain the current findings. Further, this meta-analysis conflicts with prior research since this meta-analysis found study design only moderated depression symptom outcomes and does not moderate posttraumatic stress symptom outcomes. However, Harvey and Taylor (2010) examined all psychological treatments while this meta-analysis only examined CBT, which may explain why those results differed from this study's results. These findings can help researchers and practitioners better understand in what settings what treatments work for youth exposed to traumatic events.

Further there was a significant decrease in almost all outcomes (i.e., posttraumatic stress symptoms, anxiety symptoms, depression symptoms) after exposure to CBT regardless of setting. This meta-analysis further adds to the literature by providing evidence that treatment setting moderates depression symptom outcomes, with community settings have a higher effect than school settings. Brown and colleagues' (2017) found that teachers had lower posttraumatic stress symptom effect sizes than other mental health professionals, which led to the hypothesis that schools would have smaller effects than other settings. The current meta-analysis supports the idea that perhaps school settings may be less impactful in regard to depression symptoms, but it also conflicts with prior research since posttraumatic stress symptoms were not moderated by treatment setting. This conflict can potentially be explained by the specific treatments examined in Brown and colleagues' (2017) meta-analysis (i.e., all psychological treatments) while this meta-analysis only examined CBT. Despite the moderating effect of study design on depression symptoms, though, the schools are still a setting in which treatment could be done effectively since results showed small, and not negligible, effects, and school-based studies had lower results that were significant for only depression outcomes. Clinic samples (p = .061) and hospital outpatient samples (p = .070) did not experience significant decreases in posttraumatic stress symptom outcomes, but this may be a result of the small sample sizes for both types of settings. Regardless, this meta-analysis provides valuable information about the settings in which treatment may be more impactful for youth exposed to traumatic events and the symptomology decreases that can be expected.

Another way this meta-analysis contributes to the literature is by providing evidence that racial identity did not moderate posttraumatic stress symptoms, anxiety symptoms, or depression symptoms, as mentioned previously. However, all racial identity groups experienced a reduction

in symptom severity after exposure to CBT. This implies that regardless of racial identity, CBT has a positive impact on treatment outcomes. This aligns with the hypothesis that CBT will positively impact treatment outcomes regardless of racial identity status. Since previous meta-analyses did not examine the moderating effect of racial identity on treatment outcomes, this meta-analysis provides new information to contribute to the literature. This meta-analysis also provides evidence that age does not moderate posttraumatic stress symptoms, anxiety symptoms, or depression symptoms, but there were decreases in symptom severity, implying that youth of all ages benefit from CBT. This conflicts with the prior literature (Gutermann et al., 2016) that evidenced older youth having significantly larger effects than younger youth on posttraumatic stress symptoms. Prior research was conducted on all psychological treatments, not just CBT, and this may explain the differing results. Overall, though, this meta-analysis adds to the literature by indicating youth exposed to traumatic events who are of all ages can gain from CBT regardless of primary mental health concern (i.e., posttraumatic stress, anxiety, depression).

Furthermore, this meta-analysis indicated trauma exposure, gender, study design, and treatment setting did not moderate anxiety symptoms. However, although the moderators were not significant, there was a reduction in anxiety symptoms. This implies that there is a positive impact on anxiety symptoms regardless of trauma exposure, gender, study design, and treatment setting. Prior research has not quantitatively examined variables that moderate anxiety symptom outcomes for youth exposed to traumatic events, so this meta-analysis contributes new data to the literature. Additionally, the inclusion of quantitative data for depression symptoms is new data that adds to the literature by evidencing how trauma exposure, racial identity, and gender do not moderate outcomes while study design and treatment setting do moderate depression symptom outcomes. Overall, this dissertation provides important information about some

moderating factors that impact posttraumatic stress symptoms, anxiety symptoms, and depression symptoms. Researchers and practitioners can use this data to determine what works for whom based on primary mental health concerns, allowing for more impactful, evidence-based treatment.

Another purpose of this meta-analysis was to determine which variables examined (see Table 4) would mediate treatment outcomes. None of the mediators examined in this study (i.e., parental involvement, inclusion of other treatment techniques, treatment delivery, session frequency, session length, session number) were found to significantly impact posttraumatic stress symptom, anxiety symptom, or depression symptom outcomes. However, there were decreases in posttraumatic stress symptoms, anxiety symptoms, and depression symptoms. This implies that a diverse array of CBT treatments with varying components (e.g., varying session lengths, session frequencies) all result in positive outcomes and reductions in posttraumatic stress symptoms, anxiety symptoms, and depression symptoms. This conflicts with prior research that found posttraumatic stress symptoms were mediated by parental involvement (Gutermann et al., 2016; Silverman et al., 2008) and treatment delivery (Gutermann et al., 2016; Harvey & Taylor, 2010). The past meta-analyses examined all psychological treatments rather than simply CBT, as was done in this meta-analysis, and this could explain the current findings. This meta-analysis adds to the literature by providing information mediating factors for posttraumatic stress symptoms, anxiety symptoms, and depression symptoms for CBT specifically, which has not been done in prior research.

Outside parental involvement and treatment delivery, prior research has mainly examined only session number (Brown et al., 2017; Harvey & Taylor, 2010) and session length (Harvey & Taylor, 2010) as mediating factors. The other variables examined in this meta-analysis (i.e.,

inclusion of other treatment techniques, session frequency) have not been properly examined as mediating factors in the literature. Thus, this meta-analysis adds to the current literature by providing evidence that these variables do not mediate posttraumatic stress symptom, anxiety symptom, or depression symptom outcomes for CBT, and regardless of most of these mediating factors, treatment was found to positively impact outcomes. Session frequency was not examined as a mediating variable in relation to anxiety symptom outcomes due to the limited data, so further research is needed to rule this out as a mediating factor for CBT.

Session frequency has not been frequently examined as a mediating variable for treatment in youth exposed to traumatic events. Past research has found that biweekly sessions rather than weekly sessions for adult depression have resulted in better outcomes (Cuijpers, et al., 2013). However, this meta-analysis found that there was not a significant decrease in posttraumatic stress symptoms (p = .443) and depression symptoms (p = .335) for youth exposed to treatment biweekly. Interestingly, weekly and triweekly sessions significantly decreased posttraumatic stress symptoms and weekly sessions significantly decreased depression stress symptoms. This could be in part due to the small sample sizes, but further study is needed to better understand the mediating effect of session frequency on CBT for youth exposed to traumatic events. This contradicts the idea that longer treatment may impact treatment outcomes; instead practitioners may want to focus on the quality of care as the quantity does not determine outcomes.

Additionally, although anxiety also showed high heterogeneity, none of the moderators and mediators examined were statistically significant. This means that there may have been a moderator or mediator that was not examined in the study (see Table 14) that may be impacting anxiety outcomes. These results should be interpreted cautiously and generalization about

moderator impact may be limited since the moderators that were significant varied depending on the outcome measure.

Overall, the findings of this study contribute greatly to the literature. This study examined the impact of CBT on posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes, allowing researchers and practitioners to better understand which treatments work for youth exposed to traumatic events. It also provided more data on CBT subtreatments and how various subtreatments impact treatment outcomes. Further, this meta-analysis found specific moderators (i.e., trauma type, gender, study design, treatment setting) were statistically significant for only some treatment outcomes (i.e., posttraumatic stress symptoms, depression symptoms) while others (e.g., predominant race in sample, different age groups) were not found to be statistically significant for any treatment outcomes (i.e., posttraumatic stress symptoms, anxiety symptoms, and depression symptoms). However, though there were statistically significant moderators, treatment appeared to positively impact youth exposed to traumatic events equally. For example, there were no statistical differences in racial identity, suggesting that CBT works equally well for all youth regardless of the youth's racial identity. Similarly, while there were no statistically significant mediators in this meta-analysis, youth receiving CBT experienced positive outcomes. This implies that regardless of certain factors (e.g., parental involvement, session length), CBT works equally well for all youth. With the findings of this meta-analysis, researchers and practitioners can better understand for whom and under what circumstances CBT positively impacts outcomes for youth exposed to traumatic events.

Strengths and Limitations of the Meta-Analysis

A strength of this meta-analysis is it supplies evidence on the impact of CBT for youth exposed to traumatic events. However, many studies in the meta-analysis simply stated that they

used cognitive behavioral treatment or they referred to previously studied CBT manuals without clarifying exactly which treatment techniques were used in their study. Because of this, it had to be assumed that all components of CBT were used in all 94 studies. This assumption limited the meta-analytic interpretation as it had to be assumed that the 94 studies were truly examining CBT. In future studies, researchers should specify exactly which treatment techniques were used so that researchers and practitioners can better understand the components of treatment that were used in the study and label the treatment accurately.

Another strength of this meta-analysis is that it provides researchers and practitioners with more information on the gaps in research that need to be filled for CBT. For example, sample sizes for anxiety symptom outcomes were smaller than for the other outcome measures, and further research may be needed to address heterogeneity. Additionally, while this meta-analysis was able to determine some moderating variables for posttraumatic stress symptom and depression symptom outcomes, further research is needed since it is likely that there were some other moderators that were not reported in individual studies that could be impacting treatment outcomes (see Table 14).

Yet another strength of this meta-analysis was the examination of moderator variables, specifically those related to the sample's demographic characteristics. This helps to ensure generalizability of the treatment research across the overall population in the countries in which the treatments were studied. However, there continue to be gaps in the research (see Table 14). Specifically, there are racial identity (e.g., Asian/Asian American youth, Native American youth), trauma type (i.e., racial trauma, generational trauma, neglect), socioeconomic status, sexual orientation, gender identity, and physical and mental health comorbidity variables that need to be examined. Further, youth involved in the juvenile justice system and in residential

placement facilities need to be studied. Future research should focus on examining these populations. Future research should also report demographic variables that were not commonly found in the 94 studies, and thus could not be examined in this meta-analysis (e.g., sexual orientation, gender identity, consistent socioeconomic status data, specific mental health comorbidity data). These are important variables to include about the treatment sample to better understand for whom treatment works.

A limitation of this study was that certain moderator variables were examined in a manner that limits interpretation. Race was examined by examining the predominant race in the study due to convenience for meta-analytic purposes, and individual studies need to be conducted to determine the moderating impact of race on treatment outcomes. Furthermore, the methods used to examine age as a moderator analysis were limited; mean age was used to conduct the analysis, and this likely limited the outcomes. Future research should examine age through developmental age units to determine if CBT is developmentally appropriate for youth of varying age groups.

While there was data showing inclusion of other treatment techniques (e.g., DBT, body-oriented exercise, play therapy), the only analyses that could be done in this meta-analysis was on whether or not other treatment techniques were used in general. More research is needed on specific techniques that are used in addition to CBT that make the treatment more effective. More is also needed on if there is a specific treatment technique outside of CBT that is more effective than the others. This can help both researchers and practitioners better understand the mechanisms of change that impact treatment outcomes for youth exposed to traumatic events. Furthermore, since practitioner theoretical orientation (e.g., psychodynamic, cognitive behavioral, family systems, eclectic) may vary, it is important that researchers study and know

what extra components are included in CBT in naturalistic, real-world settings and how well these techniques work in addition to CBT.

Furthermore, a limitation of this meta-analysis is regarding measurement of outcomes. As seen in Table 8, there were 22 measures used to examine posttraumatic stress symptoms, seven measures used to examine anxiety symptoms, and 11 measures used to examine depression symptoms. The lack of consistency in measures lessens the methodological rigor of treatment studies and raises concerns about comparing treatment studies. Consistency in measure use should be considered in future research to ensure methodological rigor and enhance understanding of the true impact of treatment on posttraumatic stress symptoms, anxiety symptoms, and depression symptoms.

Another factor to consider about this meta-analysis is that the youth involved in treatment were typically those who completed treatment. While minimal data was reported on the youth who did not complete treatment, thus an analysis of these youth could not be completed, this is important data to include. The literature has shown that youth who prematurely terminate treatment tend to lose out on many of the positive impacts of treatment and it can limit treatment effectiveness (Brand & Jungmann, 2014). Additionally, knowing about attrition rates and the potential moderators impacting attrition will help practitioners counteract these effects and retain more youth in treatment. For example, prior research has shown that the number of traumatic events experienced may impact attrition from TF-CBT (Wamser-Nanney & Steinzor, 2017). Thus, further research is needed on the factors that impact attrition for youth exposed to traumatic events who are treated with CBT.

Lastly, one limitation of this study and a focus for future research is the varying samples sizes associated with certain categories. For example, while there were a number of studies that

examined youth exposed to sexual abuse/assault, there were fewer studies that examined youth exposed to physical abuse, limiting the conclusions that can be made about the analyses in this meta-analysis. Future research should focus on expanding on the various populations that are not as commonly studied (e.g., Native American youth, youth exposed to physical abuse, LGBTQ youth) in the CBT literature.

Conclusion

The purpose of this meta-analysis was to provide a synthesis of the current literature on CBT and the moderating and mediating variables that impact treatment outcomes to better understand what CBT treatments work for whom and under what circumstances. Overall, this meta-analysis found CBT to be an impactful treatment for youth exposed to traumatic events of varying populations. The meta-analysis also found that involvement in almost all CBT subtreatments resulted in positive posttraumatic stress symptom, anxiety symptom, and depression symptom outcomes. Further, the study found that trauma type and gender moderated posttraumatic stress symptoms while study design and treatment setting moderated depression symptoms. No moderators examined significantly impacted anxiety symptoms.

One of the strengths of this study was the thorough examination of the moderators and mediators that impact posttraumatic stress symptoms, anxiety symptoms, and depression symptoms, thus supporting generalizability of CBT across various populations and expanding on what works for youth exposed to traumatic events. It also allows for practitioners to choose what specific subtreatment may be best suited for the populations with whom they are working. Furthermore, this meta-analysis allows for practitioners to aim treatment at the primary presentation problem (i.e., posttraumatic stress symptoms, anxiety symptoms, depression symptoms) for youth exposed to traumatic events. While future research is needed to address the

gaps in the current literature, this meta-analytic review should provide both researchers and practitioners with salient data regarding CBT for youth exposed to traumatic events.

APPENDICES

APPENDIX A

TABLES AND FIGURES

Table 1.

Variables in Past Meta-Analyses/Systematic Reviews

			Demographics				*Study Design*	
Authors and Date	*Trauma Type*	*Treatment(s)*	*Age*	*Gender*	*Race*	*SES*	*Studies' Settings*	*Studies' Methodologies*
Brown et al., 2017 (*N* = 37)	MPA, ND, T/W	CBT, EMDR, KidNET	Mean Range: 8.2-16.6 years	Reported	NR	NR	NR	Pre-Post, RCT
Cary & McMillen, 2012 (*N* = 10)	IPV, SA, Various, Violence	CBT, CBITS, CCT, OTT, RAP, TF-CBT	3-18 years	NR	NR	NR	NR	RCT
Dorsey et al., 2017 (*N* = 37)	ND, SA, T/W, Various	CBITS, CBT, CCPT, CCT, EMDR, ITCT, KidNET, MED-RELAX, Mind-body skills group, PE, RRFT, SSET, TARGET, TF-CBT	4-19 years	Reported	35% of studies had diverse samples	NR	Community Clinic, School, University or Hospital Clinic	Naturalistic, Open Trial, Quasi-experimental, RCT

Table 1. (cont'd)

Gillies et al., 2012* (*N* = 14)	CSV, DV, ND, PT, SA, Various	CBT, EBT, EMDR, FBT, IPT, PDP, SC	6-18 years	Reported	43% of studies had diverse samples	NR	Medical Center, Mental Health Clinic, Refugee Camp, School, Youth Correctional Facility	RCT
Guterman n et al., 2016* (*N* = 135)	Accidents, Loss, ND, PA, SA, sickness, T/W	CBT, EMDR, Hypnotherapy, Other, PDP, Psychoed, RMI, SM, ST	Mean: 12.55 years	Reported	NR	NR	NR	Pre-Post, RCT
Harvey & Taylor, 2010 (*N* = 39)	SA	CBT, CCT, EMDR, IRT, RAP, SC, SIT, TF-CBT	NR	NR	NR	NR	Community, Inpatient	Non-random assignment, Quasi-experimental, RCT
Kowalik et al., 2011* (*N* = 8)	SA	CBT	5-17 years	25% reported gender	NR	NR	Clinic	RCT
Morina et al., 2016 (*N* = 41)	Abuse/ Neglect, MVA, ND, SA, T/W, Various, Violence	CCT, CBI, CBT, EMDR, EPSI, KidNET, Mind-body skills group, PDP, PE, RRFT, SC, SSET, TARGET	3-18 years	NR	NR	NR	NR	RCT

Table 1. (cont'd)

Silverman et al., 2008* (N = 21)	CV, DV, MVA, ND, PA, SA, Various	CBITS, CBT, CCT, CPP, CPT, EMDR, FBT, PD, RAP, RPT, SGT, TF-CBT	2-18 years	Reported	100% of studies had diverse samples	NR	NR	RCT
Slade & Warne, 2016* (N = 10)	PA, SA	TF-CBT, Play Therapy	4-12 years	Reported	100% of studies had diverse samples	NR	NR	RCT

**Note.* Studies that aggregated CBT data

Note. CBI = Classroom-Based Intervention; CBITS = Cognitive Behavioral Intervention for Trauma in Schools; CBT = Cognitive Behavioral Therapy; CCPT = Child-Centered Play Therapy; CCT = Cue-Centered Treatment; CPP = Child-Parent Psychotherapy; CPT = Cognitive Processing Therapy; CSV = Civil or Social Violence; CV = Community Violence; DV = Domestic Violence; EBT = Exposure-Based Therapy; EMDR = Eye-Movement Desensitization and Reprocessing; EPSI = Eclectical Psychosocial Intervention, FBT = Family-Based Therapy; IPT = Interpersonal Therapy; IPV = Interpersonal Violence; IRT = Imagery Rehearsal Therapy; ITCT = Integrative Treatment of Complex Trauma; KidNET = Narrative Exposure Therapy for the Treatment of Traumatized Children and Adolescents; MED-RELAX = Meditation and Relaxation Protocol for Tsunami Survivors Developed in Sri Lanka; MPA = Major Public Accident; MVA = Motor Vehicle Accident; ND = Natural Disaster; NR = Not Reported; OTT = Overshadowing the Threat of Terrorism; PA = Physical Abuse; PD = Psychological Debriefing; PDP = Psychodynamic Psychotherapy; PE = Prolonged Exposure Therapy; PT = Physical Trauma; RAP = Recovering from Abuse Program; RCT = Randomized Controlled Trial; RPT = Resilient Peer Treatment; RMI = Relaxation or Meditation Interventions; RRFT = Risk Reduction through Family Therapy; SA = Sexual Abuse/Assault; SC = Supportive Counseling; SES = socioeconomic status; SGT = Support Group Therapy; SIT = Stress Inoculation Training; SM = Stress Management; SSET = Support for Students Exposed to Trauma; ST = Supportive Therapy; TARGET = Trauma Affect Regulation: Guide for Education and Therapy; TF-CBT = Trauma-Focused Cognitive Behavioral Therapy; T/W = Terrorism/War

Table 2.

Outcomes for Past Meta-Analyses with Aggregated CBT Data

Study Author/Date	*Independent Variable*	*Dependent Variables/Outcomes*
Gillies et al., 2012	General CBT (*N* = 5)	PTSD Symptoms: Significant decrease in scores (SMD = -1.34; 95% CI = -1.79, -0.89) Depression: Significant decrease in scores (SMD: -0.80; 95% CI = -1.47 to -0.13) Anxiety: Not significantly different Loss to Follow-up: Not significantly different
Gutermann et al., 2016	General CBT; TF-CBT (*N* = 84)	Pooled analysis of CBT: large ES (*g* = 0.99; 95% CI = 0.89, 1.08) Primarily Cognitive CBT: large ES (*g* = 1.27; 95% CI = 0.65, 1.89) Primarily Exposure CBT: large ES (*g* = 1.29; 95% CI = 0.99, 1.58) Primarily Coping/Skills CBT: medium ES (*g* = 0.79; 95% CI = 0.50, 1.09) Mixed CBT: large ES (*g* = 0.97; 95% CI = 0.85, 1.10) TF-CBT: large ES (*g* = 1.15; 95% CI = 0.92, 1.38) General CBT vs TAU/active CG: medium ES (*g* = 0.52; 95% CI = 0.4, 0.63) RCTs for CBT: medium ES (*g* = 0.79; 95% CI = 0.6, 0.96)
Kowalik et al., 2011	General CBT (*N* = 21)	CBCL TP: Statistically significant effect size favoring CBT (*g* = -.33; *p* = .003) CBCL INT: Statistically significant effect size favoring CBT (*g* = -.31; *p* = .001) CBCL EXT: Statistically significant effect size favoring CBT (*g* = -.19; *p* = .04) CBCL TCOMP: CBT did not have statistically significant effect size (*g* = -.054; *p* = .62)
Silverman et al., 2008	General CBT (*N* = 11)	Based on Chambless & Hollon's (1998) classification system, TF-CBT met well-established criteria and CBITS met probably efficacious criteria PTSS: CBT (*d* = .50) had greater ES than non-CBT (*d* = .19) Depression: CBT (*d* = .29) had a greater ES than non-CBT (*d* = .08) Externalizing: CBT (*d* = .24) had a greater ES than non-CBT (*d* = .02)
Slade & Warne, 2016	TF-CBT (*N* = 6)	Global: TF-CBT (*d* = .21) had a greater ES than PT (*d* = .095) Internalizing: TF-CBT (*d* = .23) had a greater ES than PT (*d* = .096) Sexual Outcomes: TF-CBT (*d* = .16) had a greater ES than PT (*d* = .042) Parent Report: TF-CBT (*d* = .36) had a greater ES than PT (*d* = -.15)

Table 2. (cont'd)

Note. CBCL = Child Behavioral Checklist; CBITS = Cognitive Behavioral Intervention for Trauma in Schools; CBT = Cognitive Behavioral Therapy; CI = confidence interval; CG = control group; *d* = Cohen's *d*; EXT = Externalizing; *g* = Hedges' *g*; INT = Internalizing; PT = Play Therapy; PTSD = Posttraumatic Stress Disorder; PTSS = posttraumatic stress symptoms; RCT = randomized controlled trial; SMD = standardized mean difference; TAU = treatment as usual; TCOMP = Total Competence; TF-CBT: Trauma-Focused Cognitive Behavioral Therapy; TP = Total Problems

Table 3.

Cognitive Behavioral Treatments

Name of Program	*Developers*	*Year*	*Reference*	*Program Components*	*Program Duration*
Alternatives for Families: Cognitive Behavioral Therapy (AF-CBT)	Kolko & Fishman Hicks	1996	The National Child Traumatic Stress Network	psychoeducation, skill-building (e.g., emotion regulation, restructuring thoughts, managing behavior, imaginal exposure), family applications (e.g., healthy communication, enhancing safety, solving family problems)	20 sessions, 60-90 minutes
Child First	Lowell	2011	Blueprints for Healthy Youth Development	cognitive behavioral training, family therapy, home visitation, parent training, social emotional learning	6 to 12 months
Cognitive Behavioral Intervention for Trauma in Schools (CBITS)[1]	Escudero, Jaycox, Kataoka, Stein, & Wong	2003	The National Child Traumatic Stress Network	psychoeducation, relaxation training, safety assessment, cognitive restructuring, social problem-solving, trauma narrative	10 sessions, 30-45 minutes
Combined Parent-Child Cognitive-Behavioral Therapy (CPC-CBT)	Deblinger & Runyon	2013	The National Child Traumatic Stress Network	psychoeducation, coping skill building, family safety, abuse clarification (i.e., trauma narrative)	16-20 sessions, 90-120 minutes
Grief and Trauma Intervention (GTI) for Children	Salloum	2015	The California Evidence-Based Clearinghouse for Child Welfare	cognitive behavior therapy techniques, narrative therapy techniques, trauma narrative	12 sessions, 60 minutes
Preschool PTSD Treatment (PPT)	Scheeringa	2015	The California Evidence-Based Clearinghouse for Child Welfare	psychoeducation, feelings identification, coping skill building, trauma narrative	12 sessions, 60 minutes

Table 3. (cont'd)

Prolonged Exposure Therapy for Adolescents (PE-A)	Foa, Chrestman, & Gilboa-Schechtman	2009	The California Evidence-Based Clearinghouse for Child Welfare	psychoeducation, breathing retraining exercises, in vivo exposure to trauma reminders, imaginal exposure to trauma memory	8-15 sessions, 60-90 minutes
Stanford Cue-Centered Treatment (CCT)	Carrion	2015	The California Evidence-Based Clearinghouse for Child Welfare	psychoeducation, coping skills training, strength-building, cue exposure, trauma narrative, cognitive restructuring, parent psychoeducation	15-19 sessions, 45 minutes
Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) [2]	Cohen, Mannarino, & Deblinger	2004	The National Child Traumatic Stress Network	psychoeducation and parenting skills, relaxation techniques, affective modulation, cognitive coping and processing, trauma narrative, in vivo exposures to the trauma, conjoint child-parent session, and enhancing safety and future child development	12-25 sessions, 60-90 minutes
Trauma-Focused Coping (aka Multimodality Trauma Treatment)	Amaya-Jackson & March	1999	The National Child Traumatic Stress Network	psychoeducation, emotion regulation, narrative exposure, cognitive processing	14 sessions, 40-90 minutes

[1]Modified versions of CBITS are Bounce Back and Support for Students Exposed to Trauma (SSET)
[2]Modified versions of TF-CBT are Community Outreach Program- Esperanza (COPE) and Culturally Modified Trauma-Focused Treatment

Table 4.

Moderating and Mediating Factors Examined

Moderators Examined	*Mediators Examined*
Trauma type	Parental involvement
Race	Inclusion of other treatment techniques
Gender	Treatment delivery
Age	Session frequency
Study design	Session length
Treatment setting	Session number

Note. Mediators are conceptual but will be examined using moderator analyses within the context of the meta-analysis

Table 5.

Cognitive Behavioral Subtreatments and Classifications

Subtreatment Name	*Number of Studies*	*Study Author and Date*
Well-Established Treatment		
General Cognitive Behavioral Treatments	17	Berliner & Saunders, 1996; Brown et al 2006; Deblinger et al 1990; Deblinger et al., 1996; Deblinger et al., 2001; de Roos et al., 2011; Gormez et al., 2017; Graham et al., 2017; Habigzang et al., 2013; Habigzang et al., 2016; Ito et al., 2016; Jaberghaderi et al., 2004; King et al., 2000; Saltzman et al., 2001; Sezibera et al., 2009; Smith et al., 2007; Wolmer et al., 2003; Wolmer et al., 2013
Teaching Recovery Techniques (TRT)[1]	12	Barron & Abdallah, 2017; Barron et al., 2016; Barron et al., 2017; Chen et al., 2014; Ehntholt et al., 2005; Eloranta et al., 2017; Giannopoulou et al., 2006; Kangaslampi et al., 2016; Ooi et al., 2016; Pityaratstian et al., 2015; Qouta et al., 2012' Sarkadi et al., 2018
Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)	28	Allen & Hoskowitz, 2017; Bambrah et al., 2018; Bartlett et al., 2018; Cohen et al., 2004; Cohen et al., 2005; Cohen et al., 2016; Costantino et al., 2014; Damra et al., 2014; Deblinger et al., 2006; Deblinger et al., 2017; Dorsey et al., 2014; Feather & Ronan 2009; Hartman et al., 2011; Hébert &; Daignault, 2015; Jaycox et al., 2010; Jensen et al., 2014; Kameoka et al., 2015; McMullen et al., 2013; Murray et al., 2013; Nixon et al., 2012; O'Callaghan et al., 2013; O'Callaghan et al., 2015; O'Donnell et al., 2014; Ruiz 2016; Scheeringa et al., 2011; Schottelkorb et al., 2012; Stewart et al., 2017; Thornback & Muller, 2015
Probably Efficacious Treatment		
Cognitive Behavioral Intervention for Trauma in Schools (CBITS)	5	Goodkind et al., 2010; Jaycox et al., 2010; Kataoka et al., 2003; Morsette et al., 2012; Stein et al., 2003

Table 5. (cont'd)

Enhancing Resiliency Amongst Students Experiencing Stress (ERASE-Stress)	4	Berger & Gelkopf, 2009; Berger et al., 2012; Gelkopf & Berger, 2009; Shaheen et al., 2016
Narrative Exposure Therapy for Children (KIDNET)	2	Catani et al., 2009; Ruf et al., 2010
Prolonged Exposure Therapy for Adolescents (PE-A)	5	Brownlow et al., 2016; Capaldi et al., 2016; Foa et al., 2013' Gilboa-Schechtman et al., 2010; Kaczkurkin et al., 2016
Possibly Efficacious Treatment		
Classroom-Based Intervention (CBI)	1	Jordans et al., 2010
Motivation-Adaptive Skills-Trauma Resolution Eye Movement Desensitization and Reprocessing (MASTR-EMDR)	1	Farkas, 2009
Overshadowing the Threat of Terrorism (OTT)	1	Berger et al., 2007
Risk Reduction through Family Therapy (RRFT)	1	Danielson et al., 2012
Sexual Abuse-Specific Cognitive Behavioral Therapy (SAS-CBT)	1	Cohen & Mannarino, 1998
Stress Inoculation Training (SIT)	1	Wolmer et al., 2011
Experimental Treatment		
Cognitive Behavioral Therapy for Childhood Traumatic Grief (CBT-CTG)	1	Cohen et al., 2004a
Combined Parent Child Cognitive Behavioral Therapy for Families at Risk of Child Physical Abuse (CPC-CBT)	3	Kjellgren et al., 2013; Runyon et al., 2009; Runyon et al., 2010
Game-Based Cognitive Behavioral Therapy (GB-CBT)	3	Misurell et al., 2011; Misurell et al., 2014; Springer et al., 2012
Mein Weg	1	Pfeiffer & Goldbeck, 2017
Multi-Modality Trauma Treatment (MMTT)	1	March et al., 1998
PARTNERS with Teens	1	Grefe, 2011
Project LAST	1	Salloum & Overstreet, 2008
Project Sexual Abuse Family Education	1	Hubel et al., 2014

Table 5. (cont'd)

Real Life Heroes	1	Kagan et al., 2008
SAY Group	1	Sinclair et al., 1995
STEPS	1	Bicanic et al., 2014

[1] Modified version of TRT named "Children and Grief: Teaching Life Skills" included

Table 6.

Demographics of Cognitive Behavioral Treatment Studies

Study	*Trauma Type*	*Age Range*	*Location*	*Gender*	*Predominant Race in Sample*	*White/ European American*	*Black/ African American*	*Hispanic/ Latinx*	*Native American*	*Asian/ Asian American*	*Bi-Racial*	*Other*
Allen & Hoskowitz, 2017	Sexual Abuse	3-12	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	No	Yes
Bambrah et al., 2018	Various	7-12	Canada	Mixed	---	---	---	---	---	---	---	---
Barron & Abdallah, 2017	Traumatic Grief	10-18	Palestine	Mixed	---	---	---	---	---	---	---	---
Barron et al., 2016	War-Related Violence	11-15	Palestine	Mixed	---	---	---	---	---	---	---	---
Barron et al., 2017	Domestic Trauma	14-18	Scotland	Mixed	---	---	---	---	---	---	---	---
Bartlett et al., 2018	Various	3-18	United States	Mixed	White/ European American	Yes	Yes	Yes	Yes	Yes	No	No
Berger & Gelkopf, 2009	Natural Disaster	9-15	Sri Lanka	Mixed	---	---	---	---	---	---	---	---
Berger et al., 2007	War-Related Violence	7-12	Israel	Mixed	---	---	---	---	---	---	---	---
Berger et al., 2012	War-Related Violence	11-13	Israel	Mixed	---	---	---	---	---	---	---	---
Berliner & Saunders, 1996	Sexual Abuse	4-13	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	No	Yes
Bicanic et al., 2014	Rape	13-18	The Netherlands	Female	---	---	---	---	---	---	---	---
Brown et al., 2006	Terrorism	8-13	United States	Mixed	Black/ African American	No	Yes	Yes	No	No	Yes	No
Brownlow et al., 2016	Sexual Abuse/ Assault	13-18	United States	Female	Black/ African American	Yes	Yes	Yes	No	No	Yes	Yes
Capaldi et al., 2016	Sexual Abuse/ Assault	13-18	United States	Female	Black/ African American	Yes	Yes	Yes	No	No	Yes	Yes
Catani et al., 2009	Natural Disaster	8-14	Sri Lanka	Mixed	---	---	---	---	---	---	---	---
Chen et al., 2014	Natural Disaster	NR	China	Mixed	---	---	---	---	---	---	---	---

Table 6. (cont'd)

Cohen & Mannarino, 1998	Sexual Abuse	7-15	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	Yes	No
Cohen et al., 2004	Sexual Abuse	8-14	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	Yes	Yes
Cohen et al., 2004a	Traumatic Grief	6-17	United States	Mixed	White/ European American	Yes	Yes	No	No	No	No	No
Cohen et al., 2005	Sexual Abuse	8-15	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	Yes	No
Cohen et al., 2016	Various	12-17	United States	Mixed	White/ European American	Yes	Yes	Yes	Yes	Yes	No	Yes
Costantino et al., 2014	Terrorism	9-11	United States	Mixed	Hispanic/ Latinx	No	No	Yes	No	No	No	No
Damra et al., 2014	Physical Abuse	10-12	Jordan	Male	---	---	---	---	---	---	---	---
Danielson et al., 2012	Sexual Assault	13-17	United States	Mixed	Black/ African American	Yes	Yes	Yes	Yes	No	Yes	No
de Roos et al., 2011	Firework Disaster	4-18	The Netherlands	Mixed	---	---	---	---	---	---	---	---
Deblinger et al., 1990	Sexual Abuse	3-16	United States	Female	NR	NR	NR	NR	NR	NR	NR	NR
Deblinger et al., 1996	Sexual Abuse	7-13	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	No	Yes
Deblinger et al., 2001	Sexual Abuse	4-11	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	No	Yes
Deblinger et al., 2006	Sexual Abuse	8-14	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	Yes	Yes
Deblinger et al., 2017	Sexual Abuse	7-17	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	Yes	Yes
Dorsey et al., 2014	Various	6-15	United States	Mixed	Biracial	Yes	Yes	No	Yes	Yes	Yes	No
Ehntholt et al., 2005	War-Related Violence	11-15	United Kingdom	Mixed	---	---	---	---	---	---	---	---
Eloranta et al., 2017	War-Related Violence	10-13	Palestine	Mixed	---	---	---	---	---	---	---	---
Farkas, 2009	Various	13-17	Canada	Mixed	---	---	---	---	---	---	---	---

Table 6. (cont'd)

Feather & Ronan, 2009	Maltreatment	9-13	New Zealand	Mixed	---	---	---	---	---	---	---	---
Foa et al., 2013	Sexual Abuse	13-16	United States	Female	Black/ African American	Yes	Yes	Yes	No	No	Yes	Yes
Gelkopf & Berger, 2009	Terrorism	12-14	Israel	Male	---	---	---	---	---	---	---	---
Giannopoulou et al., 2006	Natural Disaster	8-12	Greece	Mixed	---	---	---	---	---	---	---	---
Gilboa-Schechtman et al., 2010	Various	12-18	NR	Mixed	---	---	---	---	---	---	---	---
Goodkind et al., 2010	Violence	12-15	United States	Mixed	Native American	No	No	No	Yes	No	Yes	No
Gormez et al., 2017	War-Related Violence	10-15	Turkey	Mixed	---	---	---	---	---	---	---	---
Graham et al., 2017	Natural Disaster	8-17	United States	Mixed	White/ European American	Yes	Yes	Yes	Yes	Yes	No	No
Grefe, 2011	Various	13-17	United States	Female	Black/ African American	Yes	Yes	Yes	No	No	Yes	No
Habigzang et al., 2013	Sexual Abuse	9-16	Brazil	Female	---	---	---	---	---	---	---	---
Habigzang et al., 2016	Sexual Violence	7-16	Brazil	Female	---	---	---	---	---	---	---	---
Hartman, 2011	Sexual Abuse	8-14	United States	Mixed	Hispanic/ Latinx	No	Yes	Yes	No	No	Yes	No
Hébert & Daignault, 2015	Sexual Abuse	3-6	Canada	Mixed	---	---	---	---	---	---	---	---
Hubel et al., 2014	Sexual Abuse	6-12	United States	Mixed	White/ European American	Yes	Yes	Yes	Yes	No	Yes	No
Ito et al., 2016	Natural Disaster	NR	Japan	Mixed	---	---	---	---	---	---	---	---
Jaberghaderi et al., 2004	Sexual Abuse	12-13	Iran	Female	---	---	---	---	---	---	---	---
Jaycox et al., 2010	Natural Disaster	9-14	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	No	Yes
Jensen et al., 2014	Various	10-18	Norway	Mixed	---	---	---	---	---	---	---	---
Jordans et al., 2010	War-Related Violence	11-14	Nepal	Mixed	---	---	---	---	---	---	---	---

Table 6. (cont'd)

Kaczkurkin et al., 2016	Sexual Abuse	13-18	United States	Female	Black/ African American	NR	Yes	NR	NR	NR	NR	NR
Kagan et al., 2008	Various	8-15	United States	Mixed	White/ European American	Yes	Yes	Yes	No	No	Yes	No
Kameoka et al., 2015	Various	3-17	Japan	Mixed	---	---	---	---	---	---	---	---
Kangaslampi et al., 2016	War-Related Violence	10-13	Palestine	Mixed	---	---	---	---	---	---	---	---
Kataoka et al., 2003	Community Violence	8-14	United States	Mixed	Hispanic/ Latinx	No	No	Yes	No	No	No	No
King et al., 2000	Sexual Abuse	5-17	Australia	Mixed	---	---	---	---	---	---	---	---
Kjellgren et al., 2013	Physical Abuse	6-14	Sweden	Mixed	---	---	---	---	---	---	---	---
March et al., 1998	Single Incident Stressor	10-15	United States	Mixed	White/ European American	Yes	Yes	No	Yes	Yes	No	No
McMullen et al., 2013	War-Related Violence	13-17	DR Congo	Male	---	---	---	---	---	---	---	---
Misurell et al., 2011	Sexual Abuse	5-10	United States	Mixed	Black/ African American	NR	Yes	Yes	NR	NR	NR	NR
Misurell et al., 2014	Sexual Abuse	4-17	United States	Mixed	Black/ African American	Yes	Yes	Yes	No	No	Yes	No
Morsette et al., 2012	Violence	10-15	United States	Mixed	Native American	Yes	No	Yes	Yes	No	No	Yes
Murray et al., 2013	Witnessing Violence	5-18	Zambia	Mixed	---	---	---	---	---	---	---	---
Nixon et al., 2012	Single Incident Trauma	7-17	Australia	Mixed	---	---	---	---	---	---	---	---
O'Callaghan et al., 2013	Sexual Exploitation	12-17	DR Congo	Female	---	---	---	---	---	---	---	---
O'Callaghan et al., 2015	War-Related Violence	8-17	DR Congo	Mixed	---	---	---	---	---	---	---	---
O'Donnell et al., 2014	Traumatic Grief	7-13	Tanzania	Mixed	---	---	---	---	---	---	---	---
Ooi et al., 2016	War-Related Violence	10-17	Australia	Mixed	---	---	---	---	---	---	---	---
Pfeiffer & Goldbeck, 2017	War-Related Violence	14-18	Germany	Male	---	---	---	---	---	---	---	---
Pityaratstian et al., 2015	Natural Disaster	10-15	Thailand	Mixed	---	---	---	---	---	---	---	---

Table 6. (cont'd)

Qouta et al., 2012	War-Related Violence	10-13	Palestine	Mixed	---	---	---	---	---	---	---	---
Ruf et al., 2010	War-Related Violence	7-16	Germany	Mixed	---	---	---	---	---	---	---	---
Ruiz, 2016	Sexual Abuse	8-16	United States	Mixed	Hispanic/ Latinx	Yes	Yes	Yes	No	No	No	Yes
Runyon et al., 2009	Physical Abuse	4-14	United States	Mixed	Black/ African American	Yes	Yes	Yes	No	No	No	No
Runyon et al., 2010	Physical Abuse	7-13	United States	Mixed	NR	NR	Yes	NR	NR	NR	NR	NR
Salloum & Overstreet, 2008	Traumatic Grief	7-12	United States	Mixed	Black/ African American	Yes	Yes	No	No	No	Yes	No
Saltzman et al., 2001	Community Violence	11-14	United States	Mixed	Hispanic/ Latinx	Yes	Yes	Yes	No	No	No	No
Sarkadi et al., 2018	War-Related Violence	13-18	Sweden	Mixed	---	---	---	---	---	---	---	---
Scheeringa et al., 2011	Various	3-6	United States	Mixed	Black/ African American	Yes	Yes	No	No	No	No	Yes
Schottelkorb et al., 2012	War-Related Violence	6-13	United States	Mixed	Black/ African American	Yes	Yes	No	No	Yes	No	Yes
Sezibera et al., 2009	War-Related Violence	15-18	Rwanda	Mixed	---	---	---	---	---	---	---	---
Shaheen & Oppenheim, 2016	War-Related Violence	10-14	Palestine	Mixed	---	---	---	---	---	---	---	---
Sinclair et al., 1995	Sexual Abuse	12-18	United States	Female	White/ European American	Yes	Yes	Yes	Yes	Yes	No	No
Smith et al., 2007	Single Incident Trauma	8-18	United Kingdom	---	---	---	---	---	---	---	---	---
Springer et al., 2012	Sexual Abuse	NR	United States	Mixed	Black/ African American	Yes	Yes	Yes	No	No	Yes	Yes
Stein et al., 2003	Violence	NR	United States	Mixed	NR	NR	NR	NR	NR	NR	NR	NR
Stewart et al., 2017	Various	7-16	United States	Mixed	Hispanic/ Latinx	Yes	Yes	Yes	No	No	No	No
Thornback & Muller, 2015	Various	7 to 12	Canada	Mixed	---	---	---	---	---	---	---	---
Wolmer et al., 2003	Natural Disaster	6-11	Turkey	Mixed	---	---	---	---	---	---	---	---

Table 6. (cont'd)

Wolmer et al., 2011	War-Related Violence	9-11	Israel	Mixed	---	---	---	---	---	---	---	---
Wolmer et al., 2013	War-Related Violence	9-11	Israel	Mixed	---	---	---	---	---	---	---	---

Note. Race data was not included for studies outside North America as constructs related to race vary by country.
Note. NR = Not Reported

Table 7.

Treatment Descriptors by Study

Study	*Treatment Type*	*Study Design*	*Setting*	*Inclusion of Other Treatment Techniques*	*Parental Involvement*	*Treatment Delivery*	*Treatment Frequency*	*Session Length*	*Number of Sessions*
Jordans et al., 2010	CBI	RCT	School	Yes	No	Group	3 x a Week	60 min	15
Goodkind et al., 2010	CBITS	Pre-Post	School	No	Yes	Group	Weekly	NR	10
Jaycox et al., 2010	CBITS	Pre-Post	School	No	Yes	Group	NR	NR	10
Kataoka et al., 2003	CBITS	RCT	School	No	Yes	Group	Weekly	NR	8
Morsette et al., 2012	CBITS	Pre-Post	School	Yes	Yes	Group	Weekly	NR	10
Stein et al., 2003	CBITS	RCT	School	No	No	Group	NR	NR	10
Cohen et al., 2004a	CBT-CTG	Pre-Post	Outpatient Clinic	No	Yes	Individual	Weekly	60 min	16
Kjellgren et al., 2013	CPC-CBT	Pre-Post	Community	No	Yes	Individual	Weekly	120 min	16
Runyon et al., 2009	CPC-CBT	Pre-Post	University	No	Yes	Individual	Weekly	120 min	16
Runyon et al., 2010	CPC-CBT	Pre-Post	University	No	Yes	Group	Weekly	120 min	16
Berger & Gelkopf, 2009	ERASE-Stress	Quasi-Experimental	School	Yes	No	Group	Weekly	90 min	12
Berger et al., 2012	ERASE-Stress	Quasi-Experimental	School	Yes	No	Group	Weekly	90 min	16

Table 7. (cont'd)

Gelkopf & Berger, 2009	ERASE-Stress	Quasi-Experimental	School	No	No	Group	Weekly	90 min	12
Shaheen & Oppenheim, 2016	ERASE-Stress	Pre-Post	School	No	Yes	NR	NR	90 min	13
Misurell et al., 2011	GB-CBT	Pre-Post	Hospital	Yes	No	Group	NR	90 min	12
Misurell et al., 2014	GB-CBT	Pre-Post	Hospital	Yes	Yes	Individual	NR	90 min	11.5
Springer et al., 2012	GB-CBT	Pre-Post	Community	Yes	No	Group	Weekly	90 min	12
Berliner & Saunders, 1996	General CBT	RCT	Sexual Assault Clinic	No	No	Group	Weekly	NR	NR
Brown et al., 2006	General CBT	Pre-Post	School	No	No	Group	Weekly	NR	10
de Roos et al., 2011	General CBT	RCT	Community	No	Yes	Individual	Weekly	60 min	4
Deblinger et al., 1990	General CBT	Pre-Post	Community	No	Yes	Individual	NR	NR	12
Deblinger et al., 1996	General CBT	RCT	Community	No	Yes	Individual	NR	80 min	NR
Deblinger et al., 2001	General CBT	RCT	Community	No	Yes	Individual	Weekly	120 min	8.52
Gormez et al., 2017	General CBT	Pre-Post	School	No	NR	Group	Weekly	70 min	8
Graham et al., 2017	General CBT	Pre-Post	School	No	NR	Individual	Weekly	55 min	NR
Habigzang et al., 2013	General CBT	Pre-Post	NR	No	No	Group	Weekly	90 min	16

Table 7. (cont'd)

Habigzang et al., 2016	General CBT	Quasi-Experimental	NR	No	No	Group	Weekly	90 min	16
Ito et al., 2016	General CBT	Pre-Post	School	No	No	Group	Once	90 min	1
Jaberghaderi et al., 2004	General CBT	RCT	Clinic	No	Yes	Individual	Weekly	45 min	12
King et al., 2000	General CBT	RCT	Clinic	No	Yes	Individual	Weekly	50 min	20
Saltzman et al., 2001	General CBT	Pre-Post	School	No	No	Group	Weekly	50 min	20
Sezibera et al., 2009	General CBT	Pre-Post	NR	No	No	Individual	Weekly	120 min	10
Smith et al., 2007	General CBT	RCT	NR	No	Yes	Individual	Weekly	NR	10
Wolmer et al., 2003	General CBT	Pre-Post	School	Yes	Yes	Group	NR	120 min	8
Wolmer et al., 2013	General CBT	Pre-Post	School	Yes	NR	NR	NR	NR	14
Pfeiffer & Goldbeck, 2017	Mein Weg	Pre-Post	Child Welfare Agencies	Yes	No	Group	Weekly	90 min	6
Farkas, 2009	MASTR-EMDR	RCT	Community	Yes	NR	Individual	Weekly	90 min	12
March et al., 1998	MMTT	Pre-Post	School	No	No	Group	Weekly	NR	18
Catani et al., 2009	KIDNET	RCT	Refugee Camp	No	No	Individual	3 x a Week	60 min	6
Ruf et al., 2010	KIDNET	RCT	Outpatient Clinic	No	No	Individual	Weekly	90 min	8
Berger et al., 2007	OTT	Quasi-Experimental	School	Yes	Yes	Group	Weekly	90 min	8

Table 7. (cont'd)

Grefe, 2011	PARTNERS with Teens	Pre-Post	University	Yes	Yes	Individual	NR	NR	18
Salloum & Overstreet, 2008	Project LAST	Pre-Post	Community	Yes	Yes	Group	Weekly	60 min	10
Hubel et al., 2014	Project SAFE	Pre-Post	Child Advocacy Center	No	Yes	Group	Weekly	90 min	12
Brownlow et al., 2016	PE-A	RCT	Community	No	No	Individual	Weekly	60 min	14
Capaldi et al., 2016	PE-A	RCT	Community	No	No	Individual	NR	60 min	12
Foa et al., 2013	PE-A	RCT	Crisis Center	No	NR	Individual	Weekly	60 min	14
Gilboa-Schechtman et al., 2010	PE-A	RCT	Community	No	No	Individual	Weekly	60 min	13.42
Kaczkurkin et al., 2016	PE-A	RCT	Crisis Center	No	NR	Individual	Weekly	60 min	12
Kagan et al., 2008	Real Life Heroes	Pre-Post	Residential Treatment; Outpatient Mental Health Clinic	No	Yes	Individual	NR	NR	NR
Danielson et al., 2012	RRFT	RCT	Community	Yes	Yes	Individual	Weekly	60 min	23
Sinclair et al., 1995	SAY Group	Pre-Post	Group Home	No	No	Group	Weekly	NR	20
Cohen & Mannarino, 1998	SAS-CBT	RCT	Outpatient Clinic	No	Yes	Individual	Weekly	45 min	12

Table 7. (cont'd)

Bicanic et al., 2014	STEPS	Pre-Post	Community	No	Yes	Group	Weekly	120 min	9
Wolmer et al., 2011	SIT	RCT	School	No	NR	NR	Weekly	45 min	14
Barron & Abdallah, 2017	TRT	Quasi-Experimental	School	No	No	Group	NR	120 min	7
Barron et al., 2016	TRT	RCT	School	No	No	Group	NR	NR	5
Barron et al., 2017	TRT	RCT	Secure Facility	No	No	Group	Biweekly	40 min	14
Chen et al., 2014	TRT	RCT	School	Yes	No	Group	Weekly	60 min	6
Ehntholt et al., 2005	TRT	Quasi-Experimental	School	No	No	Group	Weekly	60 min	6
Eloranta et al., 2017	TRT	Quasi-Experimental	School	No	No	Group	NR	NR	NR
Giannopoulou et al., 2006	TRT	Pre-Post	Community	No	Yes	Group	Weekly	120 min	6
Kangaslampi et al., 2016	TRT	RCT	School	No	Yes	Group	Biweekly	120 min	8
Ooi et al., 2016	TRT	RCT	School	No	No	Group	NR	60 min	8
Pityaratstian et al., 2015	TRT	RCT	NR	No	No	Group	3 Days	120 min	3
Qouta et al., 2012	TRT	RCT	School	No	No	Group	Biweekly	120 min	16
Sarkadi et al., 2018	TRT	Pre-Post	Community	Yes	Yes	Group	NR	90 min	5

Table 7. (cont'd)

Allen & Hoskowitz, 2017	TF-CBT	Pre-Post	Community	Yes	No	NR	NR	NR	15.7
Bambrah et al., 2018	TF-CBT	Pre-Post	Community	No	Yes	Individual	Weekly	45 min	NR
Bartlett et al., 2018	TF-CBT	Pre-Post	Community	No	Yes	Individual	NR	NR	21
Cohen et al., 2004	TF-CBT	RCT	Community	No	Yes	Individual	Weekly	90 min	12
Cohen et al., 2005	TF-CBT	RCT	Community	No	Yes	Individual	Weekly	90 min	12
Cohen et al., 2016	TF-CBT	Pre-Post	Residential Treatment	No	NR	Individual	NR	NR	NR
Costantino et al., 2014	TF-CBT	RCT	School	No	Yes	Individual	Weekly	90 min	18
Damra et al., 2014	TF-CBT	RCT	Community	No	Yes	NR	Biweekly	60 min	10
Deblinger et al., 2006	TF-CBT	RCT	NR	No	Yes	NR	NR	NR	NR
Deblinger et al., 2017	TF-CBT	Pre-Post	Community	No	Yes	Individual	NR	NR	NR
Dorsey et al., 2014	TF-CBT	Pre-Post	Community	Yes	Yes	Individual	NR	NR	NR
Feather & Ronan, 2009	TF-CBT	Pre-Post	Community	No	Yes	Individual	NR	NR	16
Hartman, 2011	TF-CBT	Pre-Post	Hospital	No	No	Individual	Weekly	NR	NR
Hébert &; Daignault, 2015	TF-CBT	Pre-Post	Clinical	No	Yes	Individual	NR	NR	12.6

Table 7. (cont'd)

Jaycox et al., 2010	TF-CBT	Pre-Post	Community	No	Yes	Individual	NR	NR	12
Jensen et al., 2014	TF-CBT	RCT	Community	No	Yes	Individual	Weekly	NR	13.5
Kameoka et al., 2015	TF-CBT	Pre-Post	Community	No	Yes	Individual	NR	60 min	14.31
McMullen et al., 2013	TF-CBT	RCT	School	No	NR	Group	NR	NR	15
Murray et al., 2013	TF-CBT	Pre-Post	Community	No	Yes	Individual	Weekly	60 min	11
Nixon et al., 2012	TF-CBT	RCT	University Hospital	No	Yes	Individual	Weekly	90 min	6.59
O'Callaghan et al., 2013	TF-CBT	RCT	Vocational Training Setting	No	Yes	Group	3 x a Week	120 min	15
O'Callaghan et al., 2015	TF-CBT	RCT	Community	No	Yes	Individual	3 x a Week	90 min	9
O'Donnell et al., 2014	TF-CBT	Pre-Post	Community	No	Yes	Group	Weekly	NR	12
Ruiz, 2016	TF-CBT	Pre-Post	NR	No	Yes	Individual	NR	NR	12
Scheeringa et al., 2011	TF-CBT	RCT	NR	No	Yes	Individual	NR	NR	12
Schottelkorb et al., 2012	TF-CBT	RCT	School	No	Yes	Individual	Biweekly	30 min	17
Stewart et al., 2017	TF-CBT	Pre-Post	Telehealth	No	NR	Individual	Weekly	45 min	14.13
Thornback & Muller, 2015	TF-CBT	Pre-Post	Community	No	Yes	Individual	Weekly	NR	NR

Table 7. (cont'd)

Note. CBI = Classroom-Based Intervention; CBITS = Cognitive Behavioral Intervention for Trauma in Schools; CBT-CTG = Cognitive Behavioral Therapy for Childhood Traumatic Grief; CPC-CBT = Combined Parent Child Cognitive Behavioral Therapy for Families at Risk for Child Physical Abuse; ERASE-Stress = Enhancing Resiliency Amongst Students Experiencing Stress; KIDNET = Narrative Exposure Therapy for Children; GB-CBT = Game-Based Cognitive Behavioral Therapy; MASTR-EMDR = Motivation-Adaptive Skills-Trauma Resolution Eye Movement Desensitization and Reprocessing; MMTT = Multi-Modality Trauma Treatment; NR = Not Reported; OTT = Overshadowing the Threat of Terrorism; PE-A = Prolonged Exposure Therapy for Adolescents; Project LAST = Project Loss and Survival Team; Project SAFE = Project Sexual Abuse Family Education; RCT = Randomized Controlled Trials; RRFT = Risk Reduction Through Family Therapy; SAS-CBT = Sexual Abuse-Specific Cognitive Behavioral Therapy; SIT = Stress Inoculation Training; TRT = Teaching Recovery Techniques; TF-CBT = Trauma-Focused Cognitive Behavioral Therapy

Table 8.

Outcome Measures Used in Meta-Analysis

Outcome Measure	*Developers*	*k*	*Study*
Posttraumatic Stress Symptoms			
Anxiety Disorders Interview Schedule for DSM-IV (ADIS) – PTS Scale	Silverman & Albano, 1996	1	King et al., 2000
Child and Adolescent Trauma Screen (CATS)	Sachser et al., 2017	1	Pfeiffer & Goldbeck, 2017
Child Post-Traumatic Stress Disorder Reaction Index (CPTSD-RI)	Pynoos et al., 1987	2	Wolmer et al., 2003; Wolmer et al., 2013
Child PTSD Symptom Scale (CPSS)	Foa et al., 2001	14	Brown et al., 2006; Brownlow et al., 2016; Capaldi et al., 2016; Foa et al., 2013; Gilboa-Schechtman et al., 2010; Goodkind et al., 2010; Grefe, 2011; Jensen et al., 2014; Jordans et al., 2010; Kaczkurkin et al., 2016; Kataoka et al., 2003; Morsette et al., 2012; Nixon et al., 2012; Smith et al., 2007; Stein et al., 2003
Child Report of Post-Traumatic Symptoms (CROPS)	Greenwald & Rubin, 1999	1	Jaberghaderi et al., 2004
Child Revised Impact of Events Scale (CRIES)	Smith et al., 2003	10	Barron & Abdallah, 2017; Barron et al., 2016; Barron et al., 2017; Chen et al., 2014; Eloranta et al., 2017; Giannopoulou et al., 2006; Kangaslampi et al., 2016; Ooi et al., 2016; Qouta et al., 2012; Sarkadi et al., 2018
Child Stress Scale (CSS)	Lipp & Lucarelli, 1998	1	Habigzang et al., 2013
Children's Impact of Traumatic Events–Revised (CITES-R)	Wolfe et al., 1991	1	Hubel et al., 2014
Children's Post-Traumatic Stress Reaction Index (CPTS-RI)	Nader & Fairbanks, 1994	3	Feather & Ronan, 2009; Gormez et al., 2017; Hébert & Daignault, 2015

Table 8. (cont'd)

Clinician-Administered PTSD Scale-Child and Adolescent Version (CAPS-C)	Nader et al., 1994	1	March et al., 1998
Diagnostic Interview Schedule for Children (DISC) – PTS Scale	Shaffer et al., 2000	1	Farkas, 2009
DSM-III-R PTSD Symptoms	APA, 1987	1	Deblinger et al., 1990
DSM-IV Interview	APA, 2003	1	Habigzang et al., 2016
Impact of Events Scale – Revised (IES-R)	Weiss, 2004	2	Ehntholt et al., 2005; Ito et al., 2016
Post-Traumatic Stress Symptoms in Children (PTSS–C)	Ahmad et al., 2000	1	Damra et al., 2014
Preschool Age Psychiatric Assessment (PAPA) – PTSD Scale	Egger et al., 2006	1	Scheeringa et al., 2011
Schedule for Affective Disorders and Schizophrenia for School-Aged Children (K-SADS)	Kaufman et al., 1997	7	Cohen et al., 2004; Deblinger et al., 1996; Deblinger et al., 2001; Deblinger et al., 2006; Deblinger et al., 2017; Runyon et al., 2009; Runyon et al., 2010
Trauma Symptom Checklist for Children (TSCC) – PTS Scale	Briere, 1996	11	Bicanic et al., 2014; Cohen et al., 2005; Graham et al., 2017; Hartman, 2011; Kagan et al., 2008; Kjellgren et al., 2013; Misurell et al., 2011; Misurell et al., 2014; Ruiz, 2016; Springer et al., 2012; Thornback & Muller, 2015
Trauma Symptom Checklist for Young Children (TSCYC) – PTS Scale	Briere, 2005	2	Allen & Hoskowitz, 2017; Bambrah et al., 2018
UCLA PTSD Reaction Index for DSM-IV	Steinberg et al., 2004	27	Berger & Gelkopf, 2009; Berger et al., 2007; Berger et al., 2012; Catani et al., 2009; Cohen et al., 2016; Cohen et al., 2004a; Costantino et al., 2014; Danielson et al., 2012; de Roos et al., 2011; Dorsey et al., 2014; Gelkopf & Berger, 2009; Jaycox et al., 2010; Kameoka et al., 2015; McMullen et al., 2013; Murray et al., 2013; O'Callaghan et al., 2013; O'Callaghan et al., 2015; O'Donnell et al., 2014; Pityaratstian et al., 2015; Ruf et al., 2010; Salloum & Overstreet,

Table 8. (cont'd)

			2008; Saltzman et al., 2001; Schottelkorb et al., 2012; Sezibera et al., 2009; Shaheen & Oppenheim, 2016; Stewart et al., 2017; Wolmer et al., 2011
Young Child PTSD Checklist (YCPC)	Scheeringa, 2010	1	Bartlett et al., 2018
Youth Self-Report (YSR) – PTSD Scale	Achenbach, 1991	1	Sinclair et al., 1995
Anxiety			
Multidimensional Anxiety Scale for Children (MASC)	March et al., 1997	5	Brown et al., 2006; Costantino et al., 2014; de Roos et al., 2011; Goodkind et al., 2010; March et al., 1998
Revised Children's Manifest Anxiety Scale (RCMAS)	Reynolds & Richmond, 1985	6	Berliner & Saunders, 1996; Ehntholt et al., 2005; Hubel et al., 2014; King et al., 2000; Nixon et al., 2012; Smith et al., 2007
Screen for Child Anxiety Related Disorders (SCARED)	Birmaher et al., 1999	7	Berger et al., 2007; Berger et al., 2012; Cohen et al., 2004a; Jensen et al., 2014; Jordans et al., 2010; Shaheen & Oppenheim, 2016; Stewart et al., 2017
Spence Children's Anxiety Scale	Spence, 1998	1	Gormez et al., 2017
State-Trait Anxiety Inventory for Children (STAIC)	Biaggio & Spielberger, 1983	6	Cohen & Mannarino, 1998; Cohen et al., 2004; Deblinger et al., 1990; Deblinger et al., 1996; Deblinger et al., 2006; Habigzang et al., 2013; Habigzang et al., 2016
Trauma Symptom Checklist for Children (TSCC) - Anxiety Scale	Briere, 1996	9	Bicanic et al., 2014; Cohen et al., 2005; Farkas, 2009; Graham et al., 2017; Hartman, 2011; Kjellgren et al., 2013; Misurell et al., 2011; Ruiz, 2016; Springer et al., 2012
Trauma Symptom Checklist for Young Children (TSCYC) – Anxiety Scale	Briere, 2005	1	Allen & Hoskowitz, 2017
Depression			
Beck Depression Inventory (BDI)	Beck et al., 1961	3	Berger & Gelkopf, 2009; Gelkopf & Berger, 2009; Gilboa-Schechtman et al., 2010

Table 8. (cont'd)

The Behavior Assessment System for Children, 2nd Edition (BASC-2)	Reynolds & Kamphaus, 2004	1	Grefe, 2011
Center for Epidemiological Studies Depression Scale (CES-D)	Radloff, 1977	2	Chen et al., 2014; Ito et al., 2016
Children's Depression Inventory (CDI)	Kovacs, 1992	26	Berliner & Saunders, 1996; Brown et al., 2006; Cohen & Mannarino, 1998; Cohen et al., 2004; Cohen et al., 2005; Costantino et al., 2014; Damra et al., 2014; Danielson et al., 2012; Deblinger et al., 1990; Deblinger et al., 1996; Deblinger et al., 2006; Dorsey et al., 2014; Foa et al., 2013; Goodkind et al., 2010; Habigzang et al., 2013; Habigzang et al., 2016; Hartman, 2011; Hubel et al., 2014; Jaycox et al., 2010; Kataoka et al., 2003; King et al., 2000; Kjellgren et al., 2013; March et al., 1998; Morsette et al., 2012; Nixon et al., 2012; Runyon et al., 2009; Stein et al., 2003
Depression Self-Rating Scale (DSRS)	Birleson, 1981	9	Barron et al., 2016; de Roos et al., 2011; Ehntholt et al., 2005; Eloranta et al., 2017; Giannopoulou et al., 2006; Jordans et al., 2010; Ooi et al., 2016; Qouta et al., 2012; Smith et al., 2007
Montgomery-Asberg Depression Rating Scale (MADRS-5)	Svanborg & Asberg, 1994	1	Sarkadi et al., 2018
Moods and Feelings Questionnaire (MFQ)	Angold et al., 1995	8	Barron & Abdallah, 2017; Barron et al., 2017; Cohen et al., 2016; Cohen et al., 2004a; Jensen et al., 2014; O'Donnell et al., 2014; Salloum & Overstreet, 2008; Stewart et al., 2017
Preschool Age Psychiatric Assessment (PAPA) – Depression Scale	Egger et al., 2006	1	Scheeringa et al., 2011
Reynolds Adolescent Depression Scale (RADS)	Reynolds, 1987	2	Saltzman et al., 2001; Sinclair et al., 1995

Table 8. (cont'd)

Trauma Symptom Checklist for Children (TSCC) - Depression Scale	Briere, 1996	6	Bicanic et al., 2014; Farkas, 2009; Graham et al., 2017; Misurell et al., 2011; Ruiz, 2016; Springer et al., 2012
Trauma Symptom Checklist for Young Children (TSCYC) – Depression Scale	Briere, 2005	1	Allen & Hoskowitz, 2017

Table 9.

Meta-Analyses Data for Posttraumatic Stress Symptoms in Cognitive Behavioral Treatments

					95% Confidence Interval	
Study	*Treatment Type*	*St Diff in Means*	*Standard Error*	*Variance*	*Lower Limit*	*Upper Limit*
Jordans et al., 2010	CBI	-0.1803	0.1112	0.0124	-0.3982	0.0376
Goodkind et al., 2010	CBITS	-0.4379	0.2183	0.0476	-0.8657	-0.0101
Jaycox et al., 2010	CBITS	-0.6424	0.1455	0.0212	-0.9275	-0.3573
Kataoka et al., 2003	CBITS	-0.2937	0.1689	0.0285	-0.6248	0.0374
Morsette et al., 2012	CBITS	-0.5753	0.1646	0.0271	-0.8980	-0.2527
Stein et al., 2003	CBITS	-0.7139	0.1912	0.0366	-1.0887	-0.3391
Cohen et al., 2004a	CBT-CTG	-1.7163	0.3353	0.1124	-2.3734	-1.0592
Kjellgren et al., 2013	CPC-CBT	-1.3517	0.2949	0.0870	-1.9297	-0.7737
Runyon et al., 2009	CPC-CBT	-0.6816	0.2866	0.0822	-1.2434	-0.1199
Runyon et al., 2010	CPC-CBT	-1.6224	0.2610	0.0681	-2.1339	-1.1108
Berger & Gelkopf, 2009	ERASE-Stress	-1.2752	0.1703	0.0290	-1.6090	-0.9415
Berger et al., 2012	ERASE-Stress	-0.4858	0.1772	0.0314	-0.8330	-0.1385

Table 9. (cont'd)

Gelkopf & Berger, 2009	ERASE-Stress	-0.6930	0.1997	0.0399	-1.0845	-0.3016
Shaheen & Oppenheim, 2016	ERASE-Stress	0.3889	0.1661	0.0276	0.0634	0.7144
Misurell et al., 2011	GB-CBT	-0.2377	0.2459	0.0605	-0.7197	0.2443
Misurell et al., 2014	GB-CBT	-0.3231	0.1905	0.0363	-0.6964	0.0502
Springer et al., 2012	GB-CBT	-0.5769	0.2415	0.0583	-1.0502	-0.1036
Brown et al., 2006	General CBT	-0.1024	0.1294	0.0168	-0.3561	0.1513
de Roos et al., 2011	General CBT	0.0855	0.2775	0.0770	-0.4583	0.6294
Deblinger et al., 1990	General CBT	-2.2597	0.4324	0.1870	-3.1073	-1.4122
Deblinger et al., 1996	General CBT	-0.8760	0.3156	0.0996	-1.4946	-0.2573
Deblinger et al, 1996 #2	General CBT	-0.9113	0.3101	0.0961	-1.5191	-0.3036
Deblinger et al., 2001	General CBT	0.0656	0.3019	0.0911	-0.5262	0.6573
Gormez et al., 2017	General CBT	-0.4966	0.1935	0.0374	-0.8759	-0.1173
Graham et al., 2017	General CBT	-0.3194	0.0969	0.0094	-0.5093	-0.1295
Habigzang et al., 2013	General CBT	-0.4857	0.1510	0.0228	-0.7818	-0.1897

Table 9. (cont'd)

Habigzang et al., 2016	General CBT	-0.3339	0.1012	0.0102	-0.5323	-0.1354
Ito et al., 2016	General CBT	-0.6036	0.2318	0.0537	-1.0580	-0.1493
Jaberghaderi et al., 2004	General CBT	0.5191	0.5434	0.2953	-0.5461	1.5842
King et al., 2000	General CBT	-1.2637	0.5031	0.2531	-2.2498	-0.2776
King et al., 2000 #2	General CBT	-1.1122	0.4936	0.2437	-2.0797	-0.1447
Saltzman et al., 2001	General CBT	-0.6923	0.2184	0.0477	-1.1203	-0.2643
Sezibera et al., 2009	General CBT	-0.8143	0.2460	0.0605	-1.2965	-0.3321
Smith et al., 2007	General CBT	-2.4767	0.5426	0.2945	-3.5403	-1.4132
Wolmer et al., 2003	General CBT	-0.2350	0.0713	0.0051	-0.3748	-0.0952
Wolmer et al., 2013	General CBT	-0.0939	0.0285	0.0008	-0.1498	-0.0380
Pfeiffer & Goldbeck, 2017	Mein Weg	-0.6822	0.2062	0.0425	-1.0863	-0.2781
Farkas, 2009	MASTR-EMDR	-0.4154	0.3200	0.1024	-1.0426	0.2118
March et al., 1998	MMTT	-0.9738	0.2945	0.0867	-1.5509	-0.3966
Catani et al., 2009	KIDNET	-0.0141	0.3594	0.1292	-0.7185	0.6903

Table 9. (cont'd)

Ruf et al., 2010	KIDNET	-0.6395	0.4104	0.1684	-1.4438	0.1649
Berger et al., 2007	OTT	-1.0592	0.1792	0.0321	-1.4105	-0.7079
Grefe, 2011	PARTNERS with Teens	-1.2048	0.5875	0.3452	-2.3563	-0.0533
Salloum & Overstreet, 2008	Project LAST	-1.1642	0.1931	0.0373	-1.5427	-0.7858
Hubel et al., 2014	Project SAFE	-0.4315	0.1307	0.0171	-0.6876	-0.1753
Brownlow et al., 2016	PE-A	-0.7565	0.2651	0.0703	-1.2761	-0.2369
Capaldi et al., 2016	PE-A	-0.8424	0.2672	0.0714	-1.3661	-0.3186
Foa et al., 2013	PE-A	0.6124	0.2620	0.0687	0.0988	1.1260
Gilboa-Schechtman et al., 2010	PE-A	-0.4879	0.3292	0.1084	-1.1332	0.1574
Kaczkurkin et al., 2016	PE-A	-0.8261	0.2668	0.0712	-1.3490	-0.3032
Kagan et al., 2008	Real Life Heroes	-0.4167	0.1737	0.0302	-0.7572	-0.0761
Danielson et al., 2012	RRFT	-0.3801	0.3684	0.1357	-1.1022	0.3420
Sinclair et al., 1995	SAY Group	-0.4043	0.1605	0.0258	-0.7188	-0.0897

Table 9. (cont'd)

Bicanic et al., 2014	STEPS	-0.5546	0.1678	0.0281	-0.8834	-0.2258
Wolmer et al., 2011	SIT	-0.2570	0.0536	0.0029	-0.3621	-0.1519
Barron & Abdallah, 2017	TRT	-0.4255	0.1609	0.0259	-0.7409	-0.1102
Barron et al., 2016	TRT	-0.6608	0.1747	0.0305	-1.0033	-0.3184
Barron et al., 2017	TRT	0.3809	0.4971	0.2471	-0.5934	1.3553
Chen et al., 2014	TRT	-0.4654	0.3869	0.1497	-1.2238	0.2929
Ehntholt et al., 2005	TRT	-0.8753	0.4151	0.1723	-1.6889	-0.0617
Eloranta et al., 2017	TRT	-0.1624	0.0997	0.0099	-0.3579	0.0330
Giannopoulou et al., 2006	TRT	-1.0691	0.3237	0.1048	-1.7034	-0.4347
Kangaslampi et al., 2016	TRT	-0.1315	0.0912	0.0083	-0.3102	0.0473
Ooi et al., 2016	TRT	0.0216	0.2219	0.0493	-0.4134	0.4566
Pityaratstian et al., 2015	TRT	-0.1493	0.3338	0.1114	-0.8035	0.5049
Qouta et al., 2012	TRT	-0.0908	0.1192	0.0142	-0.3243	0.1428
Sarkadi et al., 2018	TRT	-0.3671	0.1523	0.0232	-0.6657	-0.0686

Table 9. (cont'd)

Allen & Hoskowitz, 2017	TF-CBT	-0.5222	0.0661	0.0044	-0.6518	-0.3926
Bambrah et al., 2018	TF-CBT	-0.4766	0.1450	0.0210	-0.7607	-0.1925
Bartlett et al., 2018	TF-CBT	0.3318	0.1178	0.0139	0.1009	0.5627
Cohen et al., 2004	TF-CBT	-0.4888	0.1513	0.0229	-0.7854	-0.1923
Cohen et al., 2005	TF-CBT	-0.2259	0.3004	0.0902	-0.8146	0.3629
Cohen et al., 2016	TF-CBT	-0.9122	0.2104	0.0443	-1.3245	-0.4999
Costantino et al., 2014	TF-CBT	0.1378	0.2241	0.0502	-0.3014	0.5770
Damra et al., 2014	TF-CBT	-8.3090	1.4629	2.1400	-11.1762	-5.4418
Deblinger et al., 2006	TF-CBT	-0.4935	0.1678	0.0281	-0.8223	-0.1647
Deblinger et al., 2017	TF-CBT	-1.0958	0.1010	0.0102	-1.2937	-0.8979
Dorsey et al., 2014	TF-CBT	-0.7133	0.2155	0.0465	-1.1358	-0.2909
Feather & Ronan, 2009	TF-CBT	-1.1752	0.4597	0.2113	-2.0762	-0.2742
Hartman, 2011	TF-CBT	-0.8365	0.3105	0.0964	-1.4451	-0.2279
Hébert &; Daignault, 2015	TF-CBT	-0.9265	0.2899	0.0841	-1.4948	-0.3582

Table 9. (cont'd)

Jaycox et al., 2010	TF-CBT	-0.8205	0.3090	0.0955	-1.4261	-0.2149
Jensen et al., 2014	TF-CBT	-0.5018	0.1862	0.0347	-0.8668	-0.1369
Kameoka et al., 2015	TF-CBT	-1.3979	0.2377	0.0565	-1.8637	-0.9321
McMullen et al., 2013	TF-CBT	-2.7506	0.4027	0.1621	-3.5398	-1.9614
Murray et al., 2013	TF-CBT	-0.5494	0.1409	0.0198	-0.8255	-0.2733
Nixon et al., 2012	TF-CBT	0.0023	0.4369	0.1909	-0.8541	0.8587
O'Callaghan et al., 2013	TF-CBT	-1.9918	0.3399	0.1155	-2.6580	-1.3256
O'Callaghan et al., 2015	TF-CBT	0.0468	0.2831	0.0802	-0.5080	0.6017
O'Donnell et al., 2014	TF-CBT	-0.4315	0.1307	0.0171	-0.6876	-0.1753
Ruiz, 2016	TF-CBT	-0.3857	0.1619	0.0262	-0.7030	-0.0685
Scheeringa et al., 2011	TF-CBT	-1.1076	0.4050	0.1640	-1.9013	-0.3139
Schottelkorb et al., 2012	TF-CBT	0.2167	0.3945	0.1557	-0.5566	0.9900
Stewart et al., 2017	TF-CBT	-2.2825	0.4902	0.2403	-3.2433	-1.3216
Thornback & Muller, 2015	TF-CBT	-0.2793	0.1362	0.0186	-0.5463	-0.0123

Table 10.

Meta-Analyses Data for Anxiety Symptoms in Cognitive Behavioral Treatments

					95% Confidence Interval	
Study	*Treatment Type*	*St Diff in Means*	*Standard Error*	*Variance*	*Lower Limit*	*Upper Limit*
Jordans et al., 2010	CBI	0.0936	0.1110	0.0123	-0.1240	0.3111
Goodkind et al., 2010	CBITS	-0.4483	0.2187	0.0478	-0.8770	-0.0196
Cohen et al., 2004a	CBT-CTG	-0.9551	0.2573	0.0663	-1.4594	-0.4509
Kjellgren et al., 2013	CPC-CBT	-0.9296	0.2551	0.0651	-1.4296	-0.4295
Berger et al., 2012	ERASE-Stress	-0.0874	0.1751	0.0306	-0.4306	0.2557
Shaheen & Oppenheim, 2016	ERASE-Stress	0.6958	0.1785	0.0318	0.3461	1.0456
Misurell et al., 2011	GB-CBT	-0.7082	0.2712	0.0736	-1.2398	-0.1766
Springer et al., 2012	GB-CBT	-0.4997	0.2314	0.0536	-0.9533	-0.0461
Berliner & Saunders, 1996	General CBT	0.0144	0.2505	0.0627	-0.4766	0.5053
Brown et al., 2006	General CBT	-0.0977	0.1294	0.0167	-0.3514	0.1559
de Roos et al., 2011	General CBT	0.0424	0.2774	0.0769	-0.5013	0.5860

Table 10. (cont'd)

Deblinger et al., 1990	General CBT	-0.5391	0.2455	0.0603	-1.0203	-0.0579
Deblinger et al., 1996	General CBT	-0.4787	0.3058	0.0935	-1.0781	0.1207
Deblinger et al, 1996 #2	General CBT	-0.3653	0.2976	0.0886	-0.9486	0.2180
Gormez et al., 2017	General CBT	-0.6594	0.1950	0.0380	-1.0417	-0.2771
Graham et al., 2017	General CBT	-0.3194	0.0969	0.0094	-0.5093	-0.1295
Habigzang et al., 2013	General CBT	-0.7929	0.1638	0.0268	-1.1139	-0.4719
Habigzang et al., 2016	General CBT	-0.3339	0.1012	0.0102	-0.5323	-0.1354
King et al., 2000	General CBT	-0.3231	0.4624	0.2139	-1.2294	0.5833
King et al., 2000 #2	General CBT	-0.4667	0.4657	0.2168	-1.3794	0.4460
Smith et al., 2007	General CBT	-1.0958	0.4378	0.1917	-1.9539	-0.2377
Farkas, 2009	MASTR-EMDR	-0.6780	0.3256	0.1060	-1.3161	-0.0399
March et al., 1998	MMTT	-0.9738	0.2945	0.0867	-1.5509	-0.3966
Berger et al., 2007	OTT	-0.9574	0.1772	0.0314	-1.3047	-0.6100
Hubel et al., 2014	Project SAFE	-0.4430	0.1342	0.0180	-0.7060	-0.1801
Cohen & Mannarino, 1998	SAS-CBT	-0.0830	0.2933	0.0860	-0.6579	0.4918

Table 10. (cont'd)

Bicanic et al., 2014	STEPS	-0.5546	0.1678	0.0281	-0.8834	-0.2258
Ehntholt et al., 2005	TRT	-0.6337	0.4066	0.1653	-1.4305	0.1632
Allen & Hoskowitz, 2017	TF-CBT	-0.3758	0.0642	0.0041	-0.5016	-0.2501
Cohen et al., 2004	TF-CBT	-0.3678	0.1491	0.0222	-0.6601	-0.0756
Cohen et al., 2005	TF-CBT	-0.2585	0.3007	0.0904	-0.8477	0.3308
Costantino et al., 2014	TF-CBT	0.2434	0.2246	0.0505	-0.1968	0.6837
Deblinger et al., 2006	TF-CBT	-0.3694	0.1649	0.0272	-0.6926	-0.0462
Feather & Ronan, 2009	TF-CBT	-1.6306	0.5396	0.2912	-2.6882	-0.5730
Hartman, 2011	TF-CBT	-0.6102	0.3021	0.0912	-1.2022	-0.0181
Jensen et al., 2014	TF-CBT	-0.2993	0.1886	0.0356	-0.6690	0.0704
Nixon et al., 2012	TF-CBT	-0.0825	0.4371	0.1911	-0.9392	0.7742
Ruiz, 2016	TF-CBT	-0.3264	0.1603	0.0257	-0.6405	-0.0123
Stewart et al., 2017	TF-CBT	-0.8931	0.3280	0.1076	-1.5360	-0.2502

Table 11.

Meta-Analyses Data for Depression Symptoms in Cognitive Behavioral Treatments

					95% Confidence Interval	
Study	*Treatment Type*	*St Diff in Means*	*Standard Error*	*Variance*	*Lower Limit*	*Upper Limit*
Jordans et al., 2010	CBI	-0.3675	0.1119	0.0125	-0.5868	-0.1483
Goodkind et al., 2010	CBITS	-0.4129	0.2172	0.0472	-0.8386	0.0129
Jaycox et al., 2010	CBITS	-0.5695	0.1428	0.0204	-0.8494	-0.2897
Kataoka et al., 2003	CBITS	-0.3328	0.1691	0.0286	-0.6642	-0.0013
Morsette et al., 2012	CBITS	-0.3227	0.1642	0.0270	-0.6446	-0.0008
Stein et al., 2003	CBITS	-0.3779	0.1871	0.0350	-0.7446	-0.0112
Cohen et al., 2004a	CBT-CTG	-0.5820	0.2306	0.0532	-1.0339	-0.1302
Kjellgren et al., 2013	CPC-CBT	-0.7527	0.2362	0.0558	-1.2157	-0.2898
Runyon et al., 2009	CPC-CBT	-0.5125	0.2659	0.0707	-1.0337	0.0087
Berger & Gelkopf, 2009	ERASE-Stress	-0.4309	0.1570	0.0247	-0.7387	-0.1231
Gelkopf & Berger, 2009	ERASE-Stress	-0.3859	0.1958	0.0383	-0.7697	-0.0021
Misurell et al., 2011	GB-CBT	-0.4390	0.2540	0.0646	-0.9367	0.0587

Table 11. (cont'd)

Springer et al., 2012	GB-CBT	-1.03	0.3093	0.0957	-1.6362	-0.4238
Berliner & Saunders, 1996	General CBT	0.1042	0.2794	0.0781	-0.4435	0.6518
Brown et al., 2006	General CBT	-0.4471	0.1354	0.0183	-0.7125	-0.1817
de Roos et al., 2011	General CBT	-0.0392	0.2774	0.0769	-0.5829	0.5044
Deblinger et al., 1990	General CBT	-0.6951	0.2556	0.0653	-1.1962	-0.1941
Deblinger et al., 1996	General CBT	-0.7423	0.3117	0.0972	-1.3532	-0.1313
Deblinger et al, 1996 #2	General CBT	-0.6796	0.3035	0.0921	-1.2746	-0.0847
Graham et al., 2017	General CBT	-0.3194	0.0969	0.0094	-0.5093	-0.1295
Habigzang et al., 2013	General CBT	-0.3929	0.1483	0.0220	-0.6835	-0.1023
Habigzang et al., 2016	General CBT	-0.3339	0.1012	0.0102	-0.5323	-0.1354
Ito et al., 2016	General CBT	-0.5368	0.2280	0.0520	-0.9837	-0.0898
King et al., 2000	General CBT	-0.2937	0.4619	0.2134	-1.1991	0.6117
King et al., 2000 #2	General CBT	-0.3051	0.4621	0.2136	-1.2109	0.6006
Saltzman et al., 2001	General CBT	-0.3550	0.2022	0.0409	-0.7513	0.0413
Smith et al., 2007	General CBT	-0.7320	0.4217	0.1778	-1.5585	0.0945

Table 11. (cont'd)

Farkas, 2009	MASTR-EMDR	-0.9021	0.3323	0.1104	-1.5534	-0.2508
March et al., 1998	MMTT	-0.9738	0.2945	0.0867	-1.5509	-0.3966
Grefe, 2011	PARTNERS with Teens	-0.5537	0.4803	0.2307	-1.4949	0.3876
Salloum & Overstreet, 2008	Project LAST	-0.5203	0.1588	0.0252	-0.8316	-0.2089
Hubel et al., 2014	Project SAFE	-0.4352	0.1318	0.0174	-0.6936	-0.1769
Foa et al., 2013	PE-A	0.7031	0.2639	0.0696	0.1859	1.2203
Gilboa-Schechtman et al., 2010	PE-A	-0.0782	0.3246	0.1053	-0.7143	0.5580
Danielson et al., 2012	RRFT	0.0536	0.3652	0.1334	-0.6622	0.7694
Sinclair et al., 1995	SAY Group	-0.2933	0.1702	0.0290	-0.6269	0.0403
Cohen & Mannarino, 1998	SAS-CBT	-0.6092	0.2996	0.0898	-1.1964	-0.0220
Bicanic et al., 2014	STEPS	-0.5546	0.1678	0.0281	-0.8834	-0.2258
Barron & Abdallah, 2017	TRT	-0.3833	0.1606	0.0258	-0.6980	-0.0686
Barron et al., 2016	TRT	-0.0125	0.1702	0.0290	-0.3460	0.3211
Barron et al., 2017	TRT	-0.3269	0.4960	0.2460	-1.2990	0.6452

Table 11. (cont'd)

Chen et al., 2014	TRT	0.1126	0.4285	0.1836	-0.7273	0.9525
Ehntholt et al., 2005	TRT	-0.2627	0.3986	0.1589	-1.0440	0.5186
Eloranta et al., 2017	TRT	-0.3010	0.1001	0.0101	-0.4972	-0.1048
Giannopoulou et al., 2006	TRT	-1.0691	0.3237	0.1048	-1.7034	-0.4347
Ooi et al., 2016	TRT	-0.0251	0.2219	0.0493	-0.4600	0.4099
Qouta et al., 2012	TRT	0.0466	0.0911	0.0083	-0.1319	0.2252
Sarkadi et al., 2018	TRT	-0.5794	0.1593	0.0254	-0.8917	-0.2671
Allen & Hoskowitz, 2017	TF-CBT	-0.5222	0.0661	0.0043	-0.6518	-0.3926
Cohen et al., 2004	TF-CBT	-0.4033	0.1493	0.0223	-0.6960	-0.1106
Cohen et al., 2005	TF-CBT	-0.5165	0.3043	0.0926	-1.1128	0.0798
Cohen et al., 2016	TF-CBT	-0.4685	0.1862	0.0347	-0.8334	-0.1035
Costantino et al., 2014	TF-CBT	0.1781	0.2243	0.0503	-0.2615	0.6176
Damra et al., 2014	TF-CBT	-4.5083	0.8870	0.7868	-6.2469	-2.7698
Deblinger et al., 2006	TF-CBT	-0.4089	0.1647	0.0271	-0.7318	-0.0860
Dorsey et al., 2014	TF-CBT	-0.5594	0.2151	0.0463	-0.9809	-0.1378

Table 11. (cont'd)

Feather & Ronan, 2009	TF-CBT	-1.0659	0.4733	0.2240	-1.9935	-0.1382
Hartman, 2011	TF-CBT	0.1256	0.2683	0.0720	-0.4003	0.6515
Jaycox et al., 2010	TF-CBT	-0.3661	0.2761	0.0762	-0.9072	0.1749
Jensen et al., 2014	TF-CBT	-0.5491	0.1884	0.0355	-0.9184	-0.1798
Nixon et al., 2012	TF-CBT	-0.0074	0.4369	0.1909	-0.8638	0.8490
O'Donnell et al., 2014	TF-CBT	-0.4315	0.1307	0.0171	-0.6876	-0.1753
Ruiz, 2016	TF-CBT	-0.3483	0.1608	0.0259	-0.6635	-0.0330
Scheeringa et al., 2011	TF-CBT	-0.6475	0.3880	0.1505	-1.4079	0.1130
Stewart et al., 2017	TF-CBT	-0.9760	0.3137	0.0984	-1.5909	-0.3611

Table 12.

Summary of Initial Meta-Analytic Results

	k	*St Diff in Means*	*Standard Error*	*Variance*	*Confidence Interval*	*Z-value*	*p-value*	*Q- Stat*	*I^2-Stat*	*Fail-Safe N*
Random Effects										
PTS	94	-0.5674	0.0450	0.0020	-0.6556 to -0.4791	-12.5954	< 0.001	628.3455***	85.0401	7078
Anxiety	38	-0.3999	0.0576	0.0033	-0.5127 to -0.2870	-6.9421	< 0.001	124.5991***	69.5022	1451
Depression	64	-0.3997	0.0359	0.0013	-0.4699 to -0.3294	-11.1452	< 0.001	131.5867***	51.3629	4411

Note. Fail-Safe *N* = the number of studies with an effect of 0 that would be necessary to lead to nonsignificant overall results; *I^2-Stat* = the proportion of observed variance reflecting real differences in effect sizes; *K* = number of independent samples that contributed to an effect size; PTS = posttraumatic stress; *Q*-Stat = variability among effect sizes (the *Q*-statistic is tested for significant at the .05 level)

*** $p < .001$

Table 13.

Moderator and Mediator Analysis Data

	Moderator/ Mediator	*Q*	*p Q-val*	R^2	*p* R^2	*Category*	*k*	*Cohen's d*	*SE*	*95% CI*	*p*
PTS	Subtreatment	12.9653	0.073			CBITS	5	-0.5342	0.1760	-0.8792 to -0.1891	0.002
						CPC-CBT	3	-1.2273	0.2595	-1.7359 to -0.7187	<0.001
						ERASE Stress	4	-0.5112	0.1969	-0.8972 to -0.1253	0.009
						GB-CBT	3	-0.3773	0.2410	-0.8496 to -0.0951	0.117
						PE-A	5	-0.4565	0.2001	-0.8487 to -0.0643	0.023
						TRT	12	-0.3209	0.1225	-0.5610 to -0.0807	0.009
						TF-CBT	28	-0.6649	0.0822	-0.8260 to -0.5038	<0.001
						Other	35	-0.5642	0.0730	-0.7072 to -0.4212	<0.001
	Trauma Exposure	24.0856	0.004*			Natural Disaster	10	-0.5657	0.1295	-0.8195 to -0.3118	<0.001
						Physical Abuse	4	-1.4215	0.2481	-1.9079 to -0.9352	<0.001
						Sexual Abuse/Assault	28	-0.5927	0.0792	-0.7479 to -0.4375	<0.001
						Single Incident Trauma	3	-1.0176	0.3039	-1.6131 to -0.4220	0.001
						Terrorism	3	-0.2197	0.2201	-0.6512 to 0.2117	0.318

Table 13. (cont'd)

				Traumatic Grief	4	-0.8360	0.1950	-1.2181 to -0.4538	<0.001
				Various	13	-0.6168	0.1164	-0.8449 to -0.3887	<0.001
				Violence	3	-0.5789	0.2220	-1.0139 to -0.1438	0.009
				War-Related Violence	20	-0.3804	0.0873	-0.5515 to -0.2092	<0.001
				Other	7	-0.4247	0.1592	-0.7366 to -0.1127	0.008
	Predominant Race in Sample	0.7911	0.673	Black/African American	13	-0.4719	0.1392	-0.7447 to -0.1992	0.001
				Hispanic/Latinx	6	-0.5772	0.1979	-0.9650 to -0.1894	0.004
				White/European American	18	-0.6299	0.1107	-0.8469 to -0.4129	<0.001
	Gender	10.6799	0.005*	Female Only	12	-0.6404	0.1309	-0.8970 to -0.3838	<0.001
				Male Only	4	-1.3562	0.2530	-1.8521 to -0.8603	<0.001
				Mixed	78	-0.5280	0.0488	-0.6237 to -0.4324	<0.001
	Study Design	2.2113	0.331	Pre-Post	48	-0.6195	0.0630	-0.7430 to -0.4960	<0.001
				Quasi-Experimental	8	-0.6365	0.1490	-0.9285 to -0.3446	<0.001
				RCT	39	-0.4790	0.0771	-0.6300 to -0.3280	<0.001

Table 13. (cont'd)

	Treatment Setting	10.1135	0.072	Clinic	3	-0.6637	0.3539	-1.3573 to 0.0299	0.061
				Community	32	-0.6265	0.0739	-0.7713 to -0.4817	<0.001
				Hospital Outpatient	3	-0.4368	0.2408	-0.9088 to 0.0352	0.070
				School	31	-0.4311	0.0693	-0.5669 to -0.2952	<0.001
				University	3	-1.1756	0.2792	-1.7227 to -0.6284	<0.001
				Other	22	-0.6322	0.0905	-0.8095 to -0.4548	<0.001
	Parental Involvement	-0.7275	0.689	Parents Included	50	-0.6022	0.0632	-0.7261 to -0.4784	<0.001
				Parents Not Included	35	-0.5172	0.0735	-0.6612 to -0.3732	<0.001
	Other Treatment Techniques	0.04532	0.831	Inclusion of Other Techniques	19	-0.5512	0.0989	-0.7451 to -0.3574	<0.001
				Other Techniques Not Included	76	-0.5750	0.0522	-0.6773 to -0.4728	<0.001
	Treatment Delivery	2.8242	0.244	Individual	48	-0.6035	0.0664	-0.7337 to -0.4732	<0.001
				Group	41	-0.5710	0.0646	-0.6977 to -0.4444	<0.001
	Session Frequency	3.5893	0.309	Biweekly	5	-0.1720	0.2244	-0.6118 to 0.2678	0.443
				Three Times a Week	4	-0.4700	0.2298	-0.9204 to -0.0195	0.041
				Weekly	52	-0.6007	0.0623	-0.7229 to -0.4786	<0.001

Table 13. (cont'd)

						Other	34	-0.5780	0.0745	-0.7240 to -0.4320	<0.001
	Age			-0.0058	0.755		94				
	Session Length			-0.0007	0.770		64				
	Number of Sessions			-0.0104	0.366		83				
Anxiety	Trauma Exposure	4.4858	0.344			Sexual Abuse/Assault	18	-0.4100	0.0834	-0.5734 to -0.2465	<0.001
						Single Incident Trauma	3	-0.7630	0.2690	-1.2901 to -0.2359	0.005
						Various	3	-0.5650	0.2218	-0.9997 to -0.1303	0.011
						War-Related Violence	6	-0.2026	0.1365	-0.4702 to 0.0649	0.138
						Other	9	-0.4085	0.1167	-0.6373 to -0.1797	<0.001
	Predominant Race in Sample	0.4903	0.783			Black/African American	3	-0.3483	0.1540	-0.6501 to -0.0464	0.024
						Hispanic/Latinx	4	-0.3137	0.1488	-0.6053 to -0.0220	0.035
						White/European American	12	-0.4211	0.0793	-0.5766 to -0.2656	<0.001
	Gender	0.8719	0.350			Female Only	4	-0.5457	0.1647	-0.8686 to -0.2228	0.001
						Mixed	34	-0.3806	0.0643	-0.5067 to -0.2545	<0.001
	Study Design	4.7295	0.094			Pre-Post	19	-0.4967	0.0789	-0.6513 to -0.3420	<0.001

Table 13. (cont'd)

						Quasi-Experimental	4	-0.4709	0.1684	-0.8011 to 0.1408	0.005
						RCT	16	-0.2317	0.0963	-0.4205 to -0.0429	0.016
	Treatment Setting	3.9231	0.141			Community	13	-0.4707	0.1003	-0.6672 to -0.2742	<0.001
						School	11	-0.2374	0.0996	-0.4327 to -0.0421	0.017
						Other	15	-0.4841	0.0963	-0.6727 to -0.2954	<0.001
	Parental Involvement	1.0455	0.593			Parents Included	21	-0.3883	0.0838	-0.5525 to -0.2241	<0.001
						Parents Not Included	14	-0.3728	0.0981	-0.5651 to -0.1805	<0.001
	Other Treatment Techniques	0.0109	0.917			Inclusion of Other Techniques	7	-0.4146	0.1312	-0.6717 to -0.1574	0.002
						Other Techniques Not Included	32	-0.3992	0.0673	-0.5311 to -0.2673	<0.001
	Treatment Delivery	3.7720	0.152			Individual	21	-0.4439	0.0903	-0.6210 to -0.2668	<0.001
						Group	15	-0.4444	0.0927	-0.6261 to -0.2627	<0.001
	Age			0.0072	0.813		38				
	Session Length			-0.0020	0.601		27				
	Number of Sessions			-0.0009	0.962		33				
Depre-ssion	Subtreatment	3.7002	0.296			CBITS	5	-0.4082	0.1110	-0.6257 to -0.1906	<0.001

Table 13. (cont'd)

				TRT	10	-0.2487	0.0861	-0.4176 to -0.0799	0.004
				TF-CBT	17	-0.4426	0.0694	-0.5787 to -0.3065	<0.001
				Other	33	-0.4243	0.0500	-0.5222 to -0.3264	<0.001
	Trauma Exposure	14.1864	0.116	Natural Disaster	7	-0.4600	0.1025	-0.6609 to -0.2592	<0.001
				Physical Abuse	3	-0.8519	0.2107	-1.2649 to -0.4390	<0.001
				Sexual Abuse/Assault	21	-0.3690	0.0614	-0.4893 to -0.2487	<0.001
				Single Incident Trauma	3	-0.6638	0.2373	-1.1288 to -0.1988	0.005
				Terrorism	3	-0.2645	0.1461	-0.5509 to -0.0219	0.070
				Traumatic Grief	4	-0.4685	0.1214	-0.7065 to -0.2305	<0.001
				Various	8	-0.5733	0.1159	-0.8004 to -0.3463	<0.001
				Violence	3	-0.3667	0.1490	-0.6588 to -0.0747	0.014
				War-Related Violence	7	-0.2143	0.0897	-0.3901 to -0.0386	0.017
				Other	6	-0.3979	0.1248	-0.6425 to -0.1533	0.001
	Predominant Race in Sample	2.6666	0.264	Black/African American	9	-0.3768	0.1029	-0.5784 to -0.1752	<0.001
				Hispanic/Latinx	6	-0.2663	0.1113	-0.4845 to -0.0481	0.017

Table 13. (cont'd)

				White/European American	16	-0.4726	0.0661	-0.6021 to -0.3431	<0.001
	Gender	0.6278	0.428	Female Only	7	-0.3305	0.3305	-0.5090 to -0.1311	0.001
				Mixed	55	-0.4018	0.0369	-0.4741 to -0.3296	<0.001
	Study Design	10.9465	0.004*	Pre-Post	31	-0.4955	0.0453	-0.5843 to -0.4068	<0.001
				Quasi-Experimental	6	-0.3544	0.0917	-0.5342 to -0.1746	<0.001
				RCT	28	-0.2589	0.0564	-0.3694 to -0.1484	<0.001
	Treatment Setting	10.9753	0.004*	Community	22	-0.5616	0.0603	-0.6797 to -0.4435	<0.001
				School	21	-0.3088	0.0520	-0.4107 to -0.2069	<0.001
				Other	22	-0.3473	0.0624	-0.4696 to -0.2251	<0.001
	Parental Involvement	3.4889	0.175	Parents Included	32	-0.4752	0.0541	-0.5811 to -0.3692	<0.001
				Parents Not Included	28	-0.3400	0.0518	-0.4415 to -0.2384	<0.001
	Other Treatment Techniques	1.3298	0.249	Inclusion of Other Techniques	13	-0.4783	0.0772	-0.6296 to -0.3270	<0.001
				Other Techniques Not Included	52	-0.3781	0.0399	-0.4563 to -0.2999	<0.001
	Treatment Delivery	1.7499	0.417	Individual	30	-0.4014	0.0608	-0.5205 to -0.2823	<0.001
				Group	32	-0.3812	0.0474	-0.4742 to -0.2883	<0.001

Table 13. (cont'd)

	Session Frequency	2.2141	0.331		Biweekly	3	-0.1702	0.1767	-0.5164 to -0.1761	0.335
					Weekly	40	-0.3872	0.0444	-0.4743 to -0.3000	<0.001
					Other	22	-0.4370	0.0557	-0.5461 to -0.3279	<0.001
	Age			0.0246	0.133	64				
	Session Length			-0.0015	0.524	40				
	Number of Sessions			0.0043	0.652	56				

*$p < .05$, indicating statistical significance

Table 14.

Populations that Need Examining in Future Research

Moderator	*Specific Populations*
Racial Identity	• Asian/Asian American youth • Native American youth • Youth of racial minority backgrounds in other countries since race is conceptualized differently outside the United States
Trauma Type	• Racial Trauma • Generational Trauma • Neglect
Socioeconomic Status	• Low Income • Middle Income • High Income
Sexual Orientation	• Any youth who identify was lesbian, gay, bisexual, transgender, queer/questioning (LGBTQ)
Gender Identity	• Transgender • Gender nonconforming
Comorbidity	• Youth with comorbid physical health concerns • Youth with comorbid mental health concerns
Setting	• Juvenile detention center • Residential placement facility

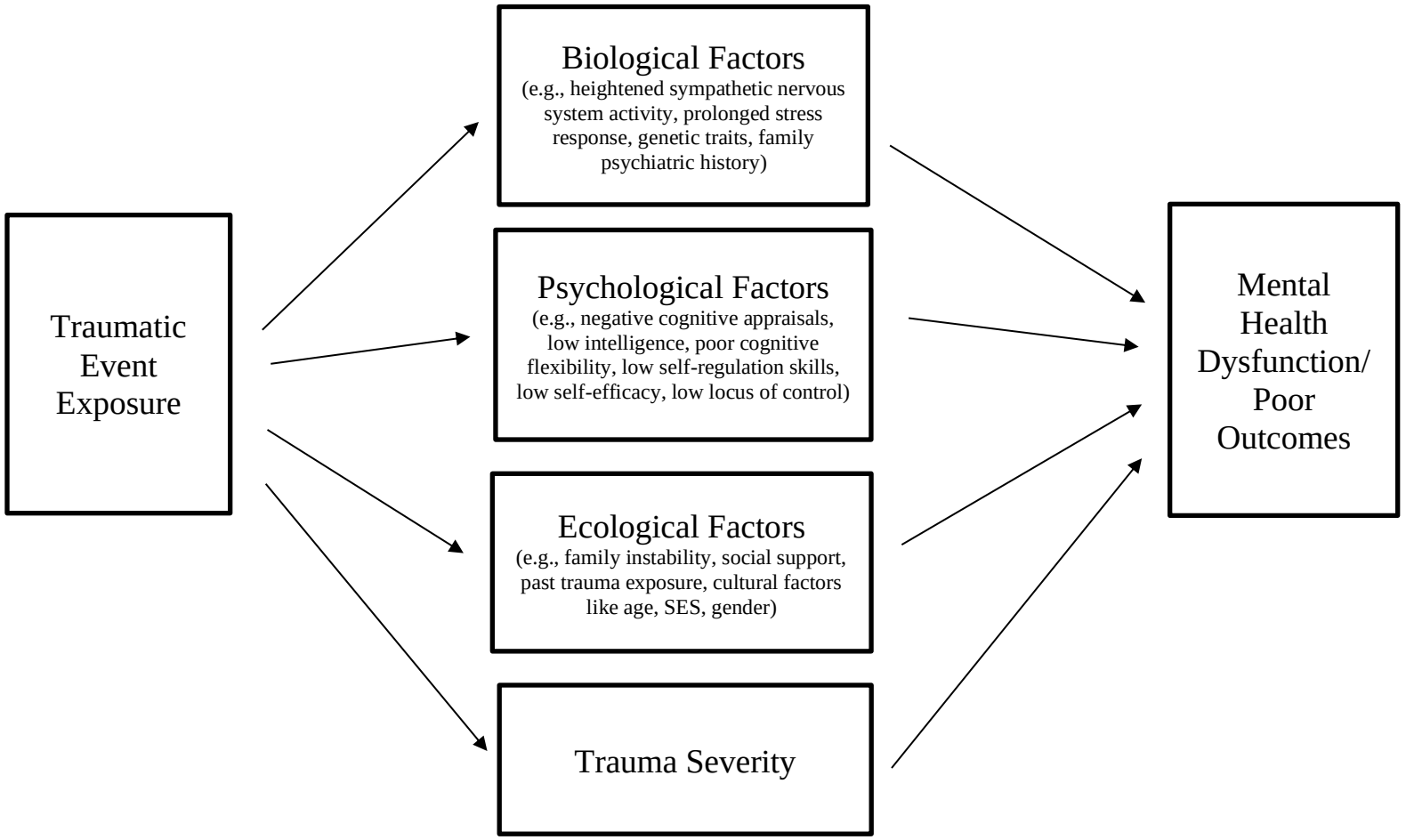

Figure 1. *Conceptual Framework on Factors That Impact Traumatized Youth Mental Health Problems.*

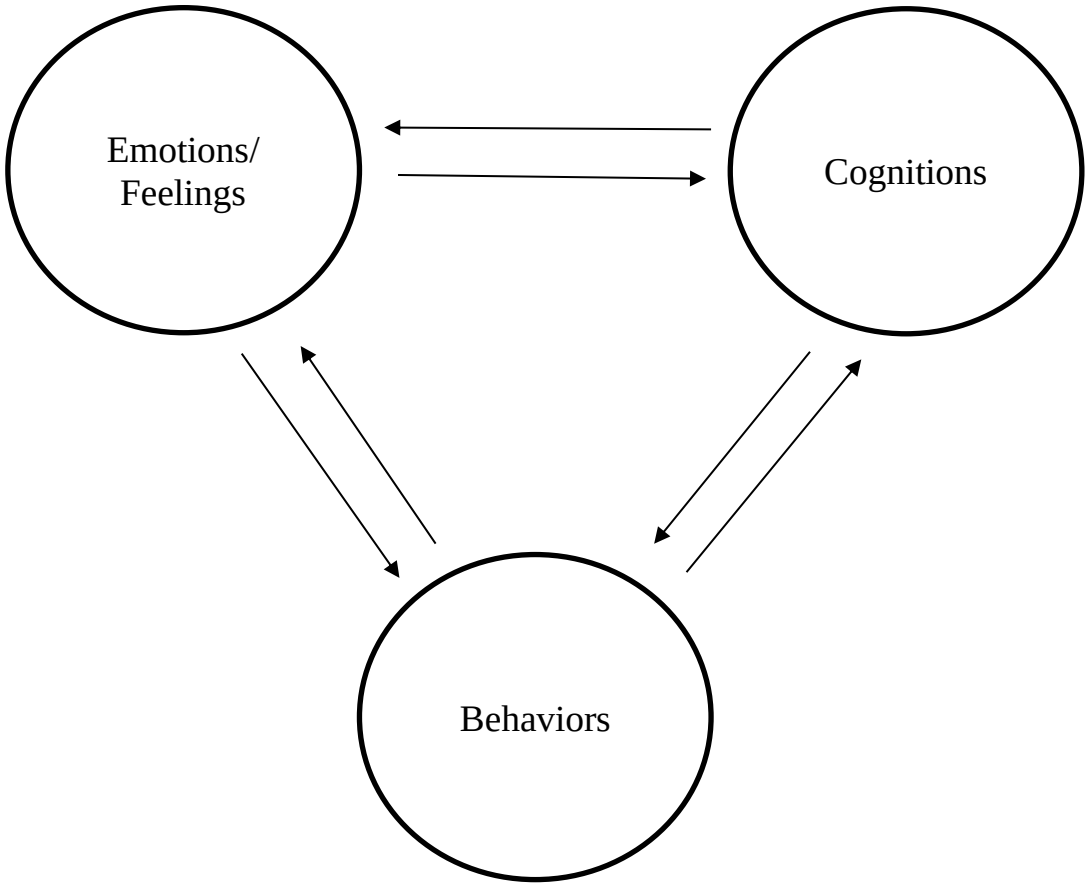

Figure 2. *Cyclic Influence of Emotion, Cognition, and Behavior (Tolin, 2016).*

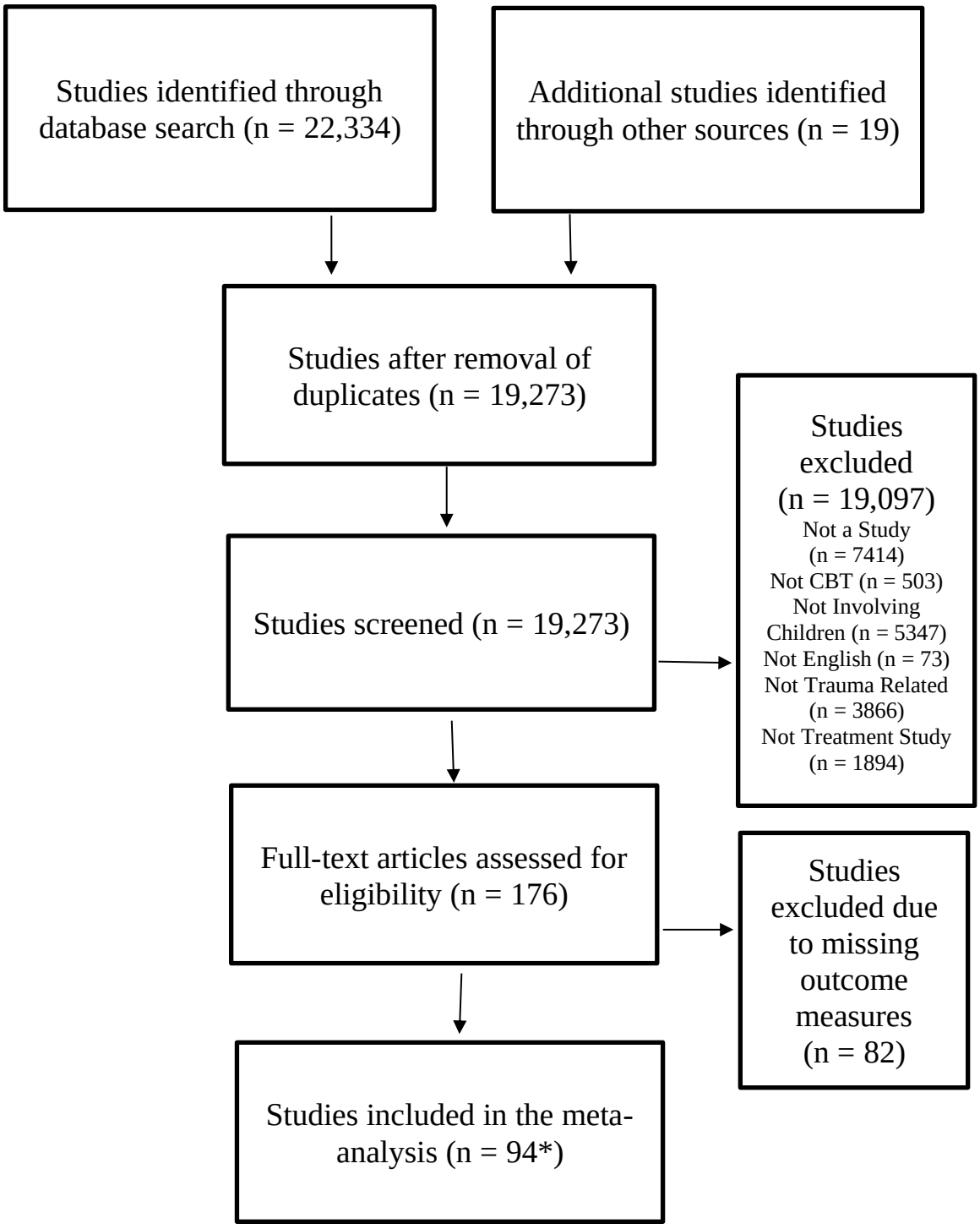

Figure 3. *Flowchart of Meta-Analysis Phases (Moher et al., 2009)*
**Note*. 94 studies that produced 97 effect sizes were included in the meta-analysis

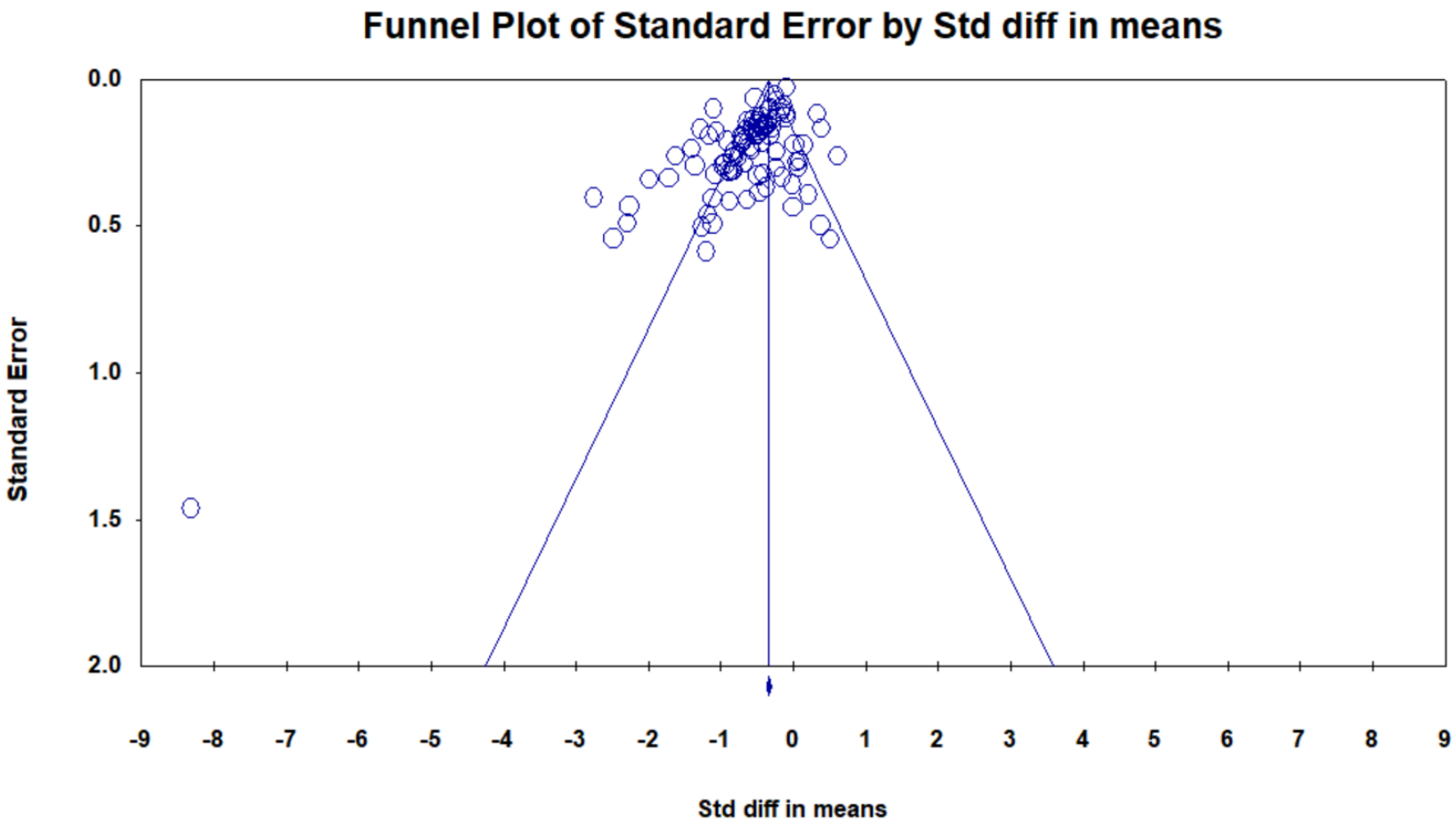

Figure 4. *Funnel Plot to Determine Publication Bias for Posttraumatic Stress Symptom Data*

Figure 5. *Funnel Plot to Determine Publication Bias for Posttraumatic Stress Symptom Data (Without Outlier)*

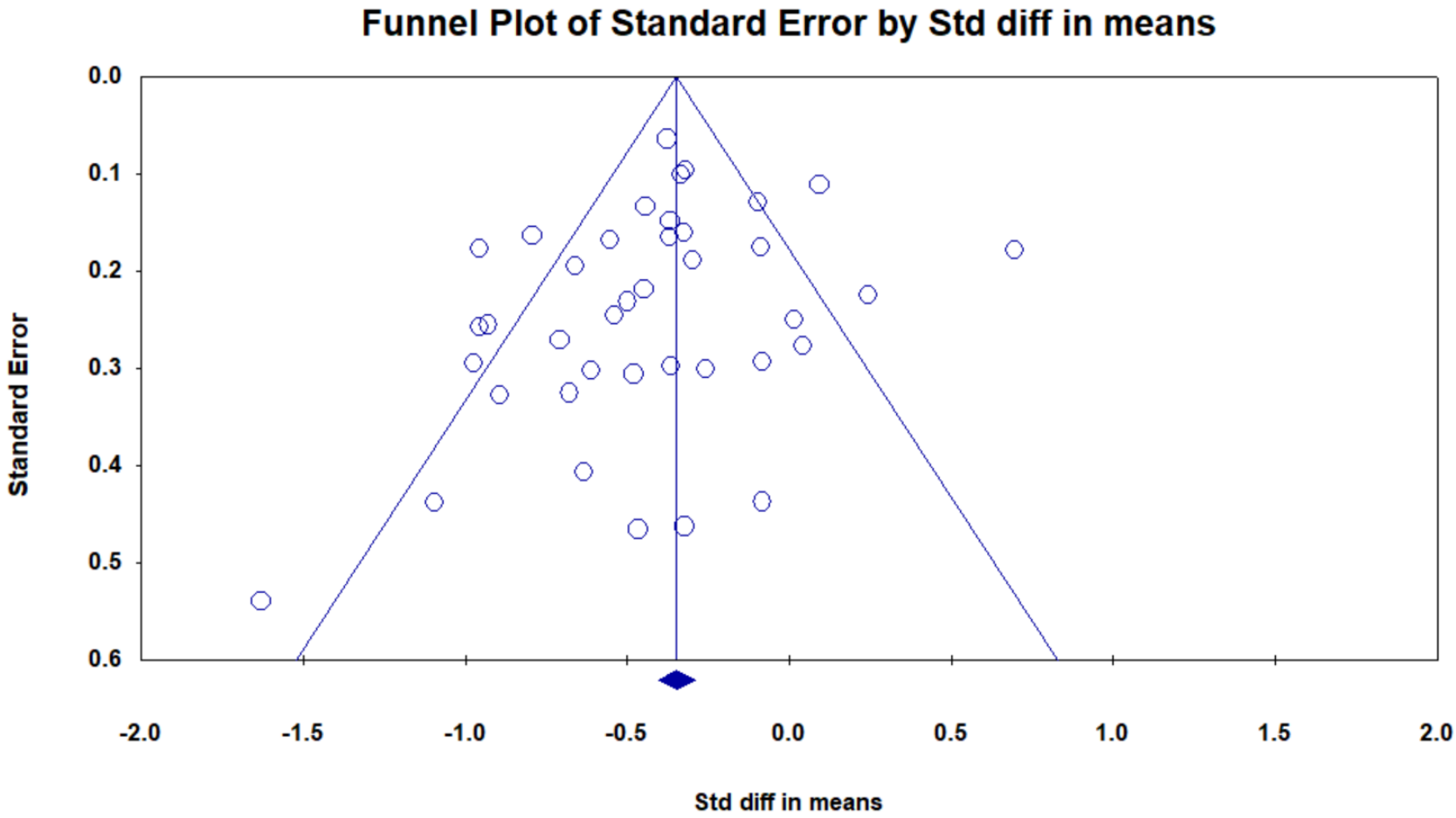

Figure 6. *Funnel Plot to Determine Publication Bias for Anxiety Symptom Data*

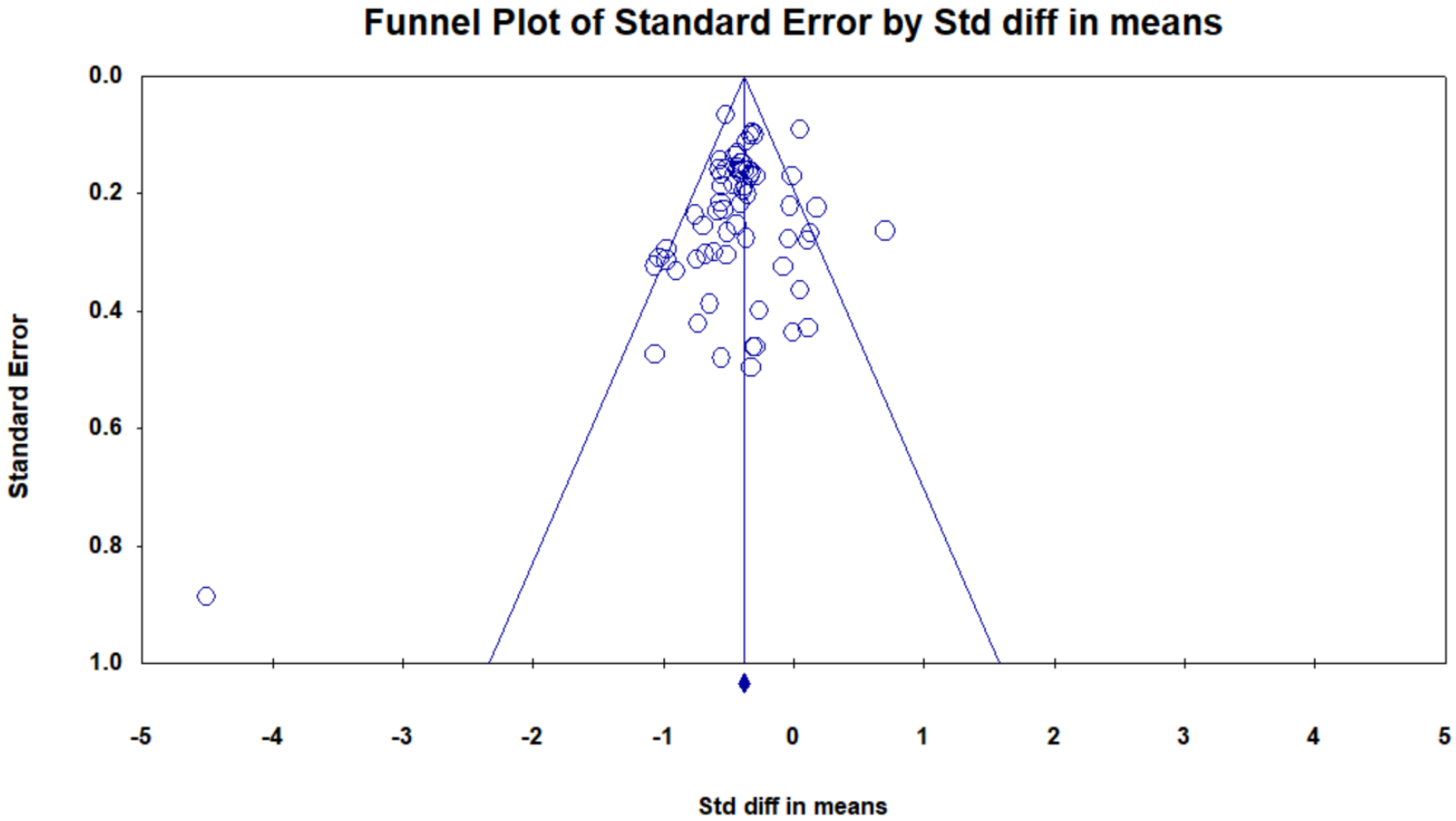

Figure 7. *Funnel Plot to Determine Publication Bias for Depression Symptom Data*

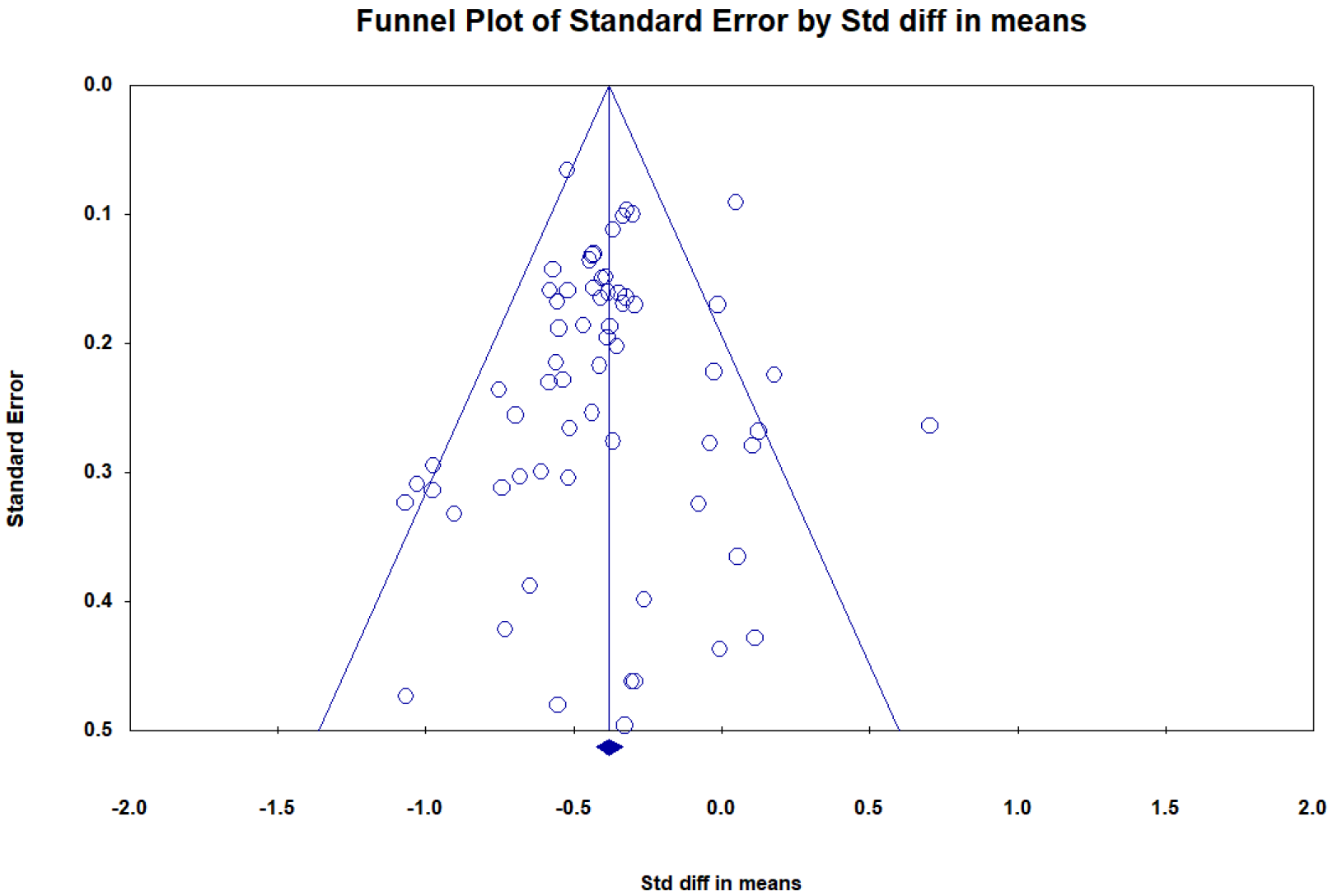

Figure 8. *Funnel Plot to Determine Publication Bias for Depression Symptom Data (Without Outlier)*

APPENDIX B

CODING SHEET

Coder Initials:

Article Characteristics	
First author's last name, first name	----
How many authors?	----
Other author's last names, first names (in order)	----
What is the year of publication/completion?	----
What type of report is this? 1. Journal 2. Book or book chapter 3. Dissertation 4. Master's thesis 5. Private report 6. Government report 7. Conference paper	----
Was this a peer-reviewed document (note if unknown)?	----
What kind of organization produced this report? 1. University 2. Government entity 3. Contract research firm	----
What is the name of the organization (note if unknown)?	----
Journal that published this article (note if this is not published in a journal)	----
Article title	----

Study/Sample Characteristics	
What was the sampling procedure? 1. Random 2. Purposive	----
Was the treatment group compared to a controlled group? 1. Yes, waitlist 2. Yes, another treatment (specify) 3. No	----
What type of setting was this study in? 1. Clinical 2. School 3. Other	

What was the geographic location of the study? 1. United States (specify the state/region) 2. International (specify country)	----
What was the community setting? 1. Urban 2. Suburban 3. Rural 4. Mixed 5. Unknown	----

Demographic Characteristics (Moderating Variables)	
Number of youth involved in the study at the beginning after meeting inclusion criteria	----
Number of youth who completed treatment	
Number of youth who left the study without completing treatment (note if there were any significant differences between attrition and completion groups)	----
Gender of youth (number of female participants: number of male participants)	
Age range	----
Mean age	----
Grade (note if unknown)	----
SES range (note if unknown)	
Race of youth (note percentage breakdown)	----
Sexuality of youth (note if unknown)	----
Mental health diagnosis (note if unknown)	----
Type of trauma exposure 1. Interpersonal 2. Non-interpersonal 3. Mixed 4. Unknown	----
Type of trauma exposure 1. Acute 2. Chronic 3. Mixed 4. Unknown	----
Specify the specific types of trauma youth were exposed to including percentage breakdowns (e.g., sexual abuse, physical abuse, witnessing violence, neglect, car accident)	

Treatment Characteristics (Mediating Variables)	
Type of treatment	----

1. TF-CBT 2. CBITS 3. Other	
Frequency of intervention 1. Twice a week 2. Weekly 3. Monthly 4. Other (specify) 5. Unknown	----
Number of sessions (specify)	----
Duration of intervention sessions (specify)	----
Were there any modifications to the treatment manual (if yes, specify)	
Was there a parent psychoeducation component (if yes, specify the number of sessions)	----
Was there a follow-up assessment?	----
If yes, after how many months? 1. 1 month 2. 3 months 3. 6 months 4. 12 months 5. Other (specify)	----
If yes, was the control group also assessed?	----
How was treatment delivered? 1. Group 2. Individual 3. Mixed 4. Unknown	----

Outcome Assessment Characteristics	
Type of assessment used (select all that apply) 1. Children's Depression Inventory (CDI) 2. Child PTSD Symptom Scale (CPSS) 3. UCLA PTSD Reaction Index 4. SCARED 5. Child Behavior Checklist (CBCL) 6. K-SADS 7. Other (specify)	----
Validity and reliability information available 1. Internal consistency 2. Test-retest correlation 3. Cronbach's alpha 4. Other (specify) 5. Unknown	----

Analysis Characteristics	
Type of analysis 1. ANOVA 2. ANCOVA 3. MANOVA 4. MANCOVA 5. Mean Difference 6. Other (specify) 7. Unknown	----
Units used in the statistical analysis 1. Groups 2. Individuals	----
Type of study design 1. Randomized controlled design 2. Quasi-experimental 3. Pre-post 4. Other (specify)	----

APPENDIX C

NARRATIVE SUMMARIES

Well-Established Treatment	
	General Cognitive Behavioral Treatments. Overall, 18 journal articles examined general cognitive behavioral treatments. Ten of the 18 studies used pre-post design, seven used RCTs, and one was a quasi-experimental study. One study occurred in a sexual assault clinic, seven were in schools, four were in the community, two were in a clinic, and four did not report the study setting. Seven studies took place in the United States and ten occurred internationally. The international studies were in Australia (King et al., 2000), Brazil (Habigzang et al., 2014; Habigzang et al., 2016), Iran (Jaberghaderi et al., 2004), Israel (Wolmer et al., 2013); Japan (Ito et al., 2016), the Netherlands (de Roos et al., 2011), Rwanda (Sezibera et al., 2009) ,and Turkey (Gormez et al., 2017; Wolmer et al., 2003). Of the seven United States-based studies, six had data about the participants' race, with the predominant race in the samples being White/European American in four studies, Black/African American in one study, and Hispanic/Latinx in one study. Most studies (k = 13) had a mix of female and male participants while four studies (Deblinger et al., 1990; Habigzang et al., 2013; Habigzang et al., 2016; Jaberghaderi et al., 2004) examined female-only samples. The types of trauma examined in the general cognitive behavioral treatments were sexual abuse/violence (k = 8), war-related violence/terrorism (k = 4), natural disasters (k = 3), a fireworks disaster (k = 1), single incident trauma (k = 1) and community violence (k = 1). Two of the studies used other treatment techniques. Specifically, Wolmer and colleagues' (2003) treatment included play techniques and Wolmer and colleagues; (2013) treatment included integrated balanced exercise. Eight studies had parental involvement in treatment, seven did not have parental involvement, and three did not explicitly report if there was parental involvement. Group treatment occurred in eight of the studies, nine studies delivered treatment through individual sessions, and one study did not report treatment delivery. Treatment typically occurred weekly (k = 13) and session length ranged from 45 minutes to two hours. The number of treatment sessions provided to participants in the studies ranged from one to 20.
	Teaching Recovery Techniques (TRT). Teaching Recovery Techniques (TRT) was examined in 12 studies. Two studies used pre-post design, three used quasi-experimental design, and seven used RCTs. One study occurred in a secure facility, two were in the community setting, eight were in schools, and one study did not report treatment setting. All twelve studies were conducted internationally in Australia (Ooi et al., 2016), China (Chen et al., 2014), Greece (Giannopoulou et al., 2006), Palestine (Barron & Abdallah, 2017; Barron et al., 2016; Eloranta et al., 2017; Kangaslampi et al., 2016; Qouta et al., 2012), Scotland (Barron et al., 2017), Sweden (Sarkadi et al., 2018), Thailand (Pityaratstian et al., 2015), and the United Kingdom (Ehntholt et al., 2005). All twelve studies had a mix of female and male participants. The types of trauma youth were exposed to were war-related violence (k = 7), domestic trauma (k = 1), traumatic grief (k = 1), and

	natural disasters (*k* = 3). Two studies involved treatment techniques in addition to cognitive behavioral techniques. Specifically, Chen and colleagues (2014) incorporated dual-attention therapy, and Sarkadi and colleagues (2018) incorporated dual attention tasks and dreamwork. Three studies included parental involvement in treatment, and nine studies did not involve parents in treatment. All studies were conducted in a group setting. Treatment occurred weekly in three studies and biweekly in three studies. Treatment occurred for three days in one study, and treatment frequency was not reported in five studies. Session length ranged from 40 minutes to 120 minutes, with two studies not reporting session length. The number of treatment sessions provided to participants in the studies ranged from three to 16, with one study not reporting the number of sessions.
	Trauma-Focused Cognitive Behavioral Therapy (TF-CBT). Trauma-focused cognitive behavioral therapy was the most common subtreatment examined in this meta-analysis (*k* = 28). Sixteen of the 28 studies used pre-post design and 12 used RCTs. Sixteen occurred in a community setting, one was telehealth, one was in a vocational training setting, one was in residential treatment, one was in a university hospital, one was in a hospital, three were in schools, one was in a clinical setting, and three did not report the study setting. Fifteen studies took place in the United States and 13 occurred internationally. The international studies were in Australia (Nixon et al., 2012), Canada (Bambrah et al., 2018; Hébert & Daignault, 2015; Thornback & Muller, 2015), DR Congo (McMullen et al., 2013; O'Callaghan et al., 2013; O'Callaghan et al., 2015), Japan (Kameoka et al., 2015), Jordan (Damra et al., 2014), New Zealand (Feather & Ronan, 2009), Norway (Jensen et al., 2014), Tanzania (O'Donnell et al., 2014), and Zambia (Murray et al., 2013). All thirteen United States-based studies included race data, with the predominant race in the samples being White/ European American in eight studies, Black/African American in two studies, Hispanic/Latinx in four studies, and Biracial in one study. Most of the studies (*k* = 25) had a mix of female and male participants, while one study (O'Callaghan et al., 2013) examined a female-only sample, and two studies (Damra et al., 2014; McMullen et al., 2013) examined male-only samples. The types of trauma examined in the TF-CBT studies were sexual abuse/exploitation (*k* = 9), physical abuse (*k* = 1), maltreatment (*k* = 1), witnessing violence (*k* n = 1), traumatic grief (*k* = 1), war-related violence/terrorism (*k* = 4), natural disasters (*k* = 1), single incident trauma (*k* = 1), and various traumas (*k* = 9). Two studies involved other treatment techniques. Specifically, Allen and Hoskowitz's (2017) involved play therapy techniques and Dorsey and colleagues' (2014) involved engagement fidelity techniques. Twenty-three studies included parental involvement in treatment, two did not include parental involvement, and three did not report parental involvement information. Three studies conducted treatment in a group setting, 22 studies engaged in individual treatment, and three did not report treatment delivery. Treatment typically occurred weekly (*k* = 11), but many studies did not report treatment frequency (*k* = 13). Session length ranged from 30 minutes to two hours, and the number of treatment sessions provided to participants in the studies ranged from nine to 21.

Probably Efficacious Treatment	
	Cognitive Behavioral Intervention for Trauma in Schools (CBITS). Overall, five journal articles examined Cognitive Behavioral Intervention for Trauma in Schools (CBITS). Three of the five studies used pre-post design and two used RCTs. All five studies occurred in schools, and all five took place in the United States. Only one study (Stein et al., 2003) did not report data about the participants' race. In the other four studies, the predominant race in the samples were Native American (k = 2), Hispanic/Latinx (k = 1), and White/European American (k = 1). All five studies examined a mix of female and male participants. The types of trauma examined in the CBITS studies were violence (k = 3), community violence (k = 1), and natural disasters (k = 1). One study used other treatment techniques. Specifically, Morsette and colleagues (2012) incorporated traditional cultural and healing practices. All but one study (Stein et al., 2003) included parental involvement in treatment. Group treatment occurred in all five studies. Treatment typically occurred weekly (k = 3) and the number of treatment sessions ranged from eight to ten sessions. No studies reported session length.
	Enhancing Resiliency Amongst Students Experiencing Stress (ERASE-Stress). Overall, four journal articles examined Enhancing Resiliency Amongst Students Experiencing Stress (ERASE-Stress). Three of the four studies used quasi-experimental design and one used pre-post design. All four studies occurred in schools internationally. Two studies occurred in Israel (Berger et al., 2012; Gelkopf & Berger, 2009), one study occurred in Sri Lanka (Berger & Gelkopf, 2009), and one study occurred in Palestine (Shaheen & Oppenheim, 2016). Three studies examined a mix of female and male participants while one study (Gelkopf & Berger, 2009) examined a male-only sample. The types of trauma examined in ERASE-Stress studies were natural disasters (k = 1) and terrorism/war-related violence (k = 3). Two studies used other treatment techniques in addition to cognitive behavioral techniques. Specifically, the treatment in Berger and Gelkopf's (2009) study used mindfulness, body-oriented exercise, and expressive therapy techniques, and the treatment in Berger and colleagues' (2012) study used religious and spiritual practices in addition to meditative practices. One study (Shaheen & Oppenheim, 2016) included parental involvement in treatment. Treatment typically occurred weekly (k = 3) in a group setting (k = 3). Session length was 90 minutes, and the number of treatment sessions provided to participants in the studies ranged from 12 to 16.
	Narrative Exposure Therapy for Children* (*KIDNET). Narrative Exposure Therapy for Children (KIDNET) was examined in two studies (Catani et al., 2009; Ruf et al., 2010). Both studies used RCT designs. One study occurred in a refugee camp and one occurred in an outpatient clinic. Both studies occurred internationally, with one study occurring in Germany with youth exposed to war-related violence (Ruf et al., 2010) and one study occurring in Sri Lanka with youth exposed to a natural disaster (Catani et al., 2009). Both studies examined a mix of female and male participants. Both studies used only cognitive behavioral techniques, and neither study included parental involvement. Catani and colleagues' (2009) study used 60-minute individual treatment three times a week

	for six sessions. Ruf and colleagues' (2010) study provided 90-minute individual treatment weekly for eight sessions.
	Prolonged Exposure Therapy for Adolescents (PE-A). Prolonged Exposure Therapy for Adolescents (PE-A) was examined in five studies. All five studies used an RCT design, with two studies occurring in a crisis center and three occurring in a community setting. Four studies were in the United States, with the predominant races in the samples being Black/African American (Brownlow et al., 2016; Capaldi et al., 2016; Foa et al., 2013; Kaczkurkin et al., 2016). Gilboa-Schechtman and colleagues (2010) did not report study location. One study examined a mix of female and male participants exposed to various traumatic events (Gilboa-Schechtman et al., 2010). Female-only samples exposed to sexual abuse/assault were treated in the other four studies. Only cognitive behavioral techniques were used in all five studies. Parents were not involved in three of the treatment studies (Brownlow et al., 2016; Capaldi et al., 2016; Gilboa-Schechtman et al., 2010), and two studies did not report parental involvement. Sixty-minute individual sessions were provided weekly in four studies. Capaldi and colleagues (2016) did not report session frequency, but they also provided 60-minute individual treatment sessions. The number of treatment sessions provided to participants ranged from 12 to 14.
Possibly Efficacious Treatment	
	Classroom-Based Intervention (CBI). One study examined Classroom-Based Intervention (CBI; Jordans et al., 2010). Jordans and colleagues' study used an RCT design in a school setting. The study occurred in Nepal, and it examined a mix of female and male participants. Jordans and colleagues (2012) examined youth exposed to war-related violence. Play therapy, creative-expressive therapy, and experiential therapy techniques were used in addition to cognitive behavioral techniques. Parents were not involved in treatment. Treatment was conducted three times a week for 60 minutes in a group setting. Overall, each group was exposed to 15 treatment sessions.
	Motivation-Adaptive Skills-Trauma Resolution – Eye Movement Desensitization and Reprocessing (MASTR-EMDR). One study examined Motivation-Adaptive Skills-Trauma Resolution – Eye Movement Desensitization and Reprocessing (MASTR-EMDR; Farkas, 2009). Farkas' (2009) study used an RCT design in a community setting. The study occurred in Canada, and it examined a mix of female and male participants exposed to various traumatic events. EMDR and motivational interviewing were used in addition to cognitive behavioral techniques. Parental involvement in treatment was not reported. Treatment was conducted weekly for 90 minutes. Overall, individual treatment occurred for 12 sessions.
	Overshadowing the Threat of Terrorism (OTT). One study examined Overshadowing the Threat of Terrorism (OTT; Berger et al., 2007) using a quasi-experimental design in a school setting. The study occurred in Israel, and it examined a mix of female and male participants exposed to war-related violence. Mindfulness, body-oriented exercise, and expressive therapy techniques were used in addition to cognitive behavioral techniques. Parents were involved in treatment.

	Berger and colleagues' (2007) study conducted 90-minute group treatment weekly for eight sessions.
	Risk Reduction Through Family Therapy (RRFT). Danielson and colleagues' (2012) study examined Risk Reduction Through Family Therapy (RRFT) through an RCT design in a community setting. The study occurred in the United States, and the predominant race in the sample was Black/African American. The sample involved a mix of female and male participants exposed to sexual assault. Multisystemic therapy was used in conjunction with cognitive behavioral techniques. Parents were involved in the weekly 60-minute sessions. Treatment was provided individually for 23 sessions.
	Sexual Abuse-Specific Cognitive Behavioral Therapy (SAS-CBT). Cohen and Mannarino's (1998) study examined Sexual Abuse-Specific Cognitive Behavioral Therapy (SAS-CBT) through an RCT design in an outpatient clinic. The study occurred in the United States, with the predominant race in the sample being White/European American. The sample was a mix of female and male participants exposed to sexual abuse. Parents were involved in this treatment that used only cognitive behavioral techniques. Treatment was provided in 45-minute individual sessions weekly for 12 sessions.
	Stress Inoculation Training (SIT). Wolmer and colleagues' (2011) study examined Stress Inoculation Training (SIT) through an RCT design in a school setting. The study occurred in Israel, and the sample was a mix of female and male participants exposed to war-related violence. Parent involvement in treatment was not reported in SIT, a treatment that used only cognitive behavioral techniques. Treatment was provided in 45-minute weekly sessions for 14 sessions. Treatment delivery method (i.e., group versus individual treatment) was not described.
Experimental Treatment	
	Cognitive Behavioral Therapy for Childhood Traumatic Grief (CBT-CTG). One study examined Cognitive Behavioral Therapy for Childhood Traumatic Grief (CBT-CTG; Cohen et al., 2004a). Cohen and colleagues' (2004a) study used pre-post design in an outpatient clinic. The study occurred in the United States, and the predominant race in the sample was White/ European American. The authors examined a mix of female and male youth exposed to traumatic grief. No other treatment techniques outside of cognitive behavioral techniques were used. Parents were involved in treatment. Treatment was conducted individually in weekly, 60-minute sessions for 16 sessions.
	Combined Parent-Child Cognitive Behavioral Therapy (CPC-CBT). Overall, three studies examined Combined Parent-Child Cognitive Behavioral Therapy (CPC-CBT). All three studies used pre-post design. One study was in a community and two were in university settings. Two studies took place in the United States and one study took place in Sweden (Kjellgren et al., 2013). Only one United States-based study included complete race data. The predominant race in that sample was Black/African American. All five studies examined a mix of female and male participants. The types of trauma examined in the three studies were physical abuse. No studies used other treatment techniques, but all three studies included parental involvement in treatment. Two studies conducted treatment individually while one study conducted treatment in a group setting. In

	all three studies, treatment was provided in 120-minute weekly sessions for 16 sessions.
	Game-Based Cognitive-Behavioral Therapy (GB-CBT). Three studies examined Game-Based Cognitive Behavioral Therapy (GB-CBT; Misurell et al., 2011; Misurell et al., 2014; Springer et al., 2012). All three studies used pre-post treatment group only designs. Two studies occurred in hospitals and one occurred in a community setting. All three studies occurred in the United States, with the predominant race in the three samples being Black/African American. All three studies examined a mix of female and male participants who had been exposed to sexual abuse. All three studies used play therapy techniques in addition to cognitive behavioral techniques. Only Misurell and colleagues (2014) included parental involvement in treatment. Only one study (Springer et al., 2012) reported treatment frequency; specifically, treatment occurred weekly. Misurell and colleagues (2014) conducted treatment individually while Misurell and colleagues (2011) and Springer and colleagues (2012) conducted treatment in a group setting. Session length was 90 minutes, and the number of treatment sessions provided to participants in the studies ranged from 11.5 to 12.
	Mein Weg. One study examined Mein Weg (Pfeiffer & Goldbeck). The study used a pre-post design in child welfare agencies. The study occurred in Germany, and the authors examined males exposed to war-related violence. Group processing principles were used in addition to cognitive behavioral techniques. Parents were not involved in the weekly group treatments. Treatment occurred for 90 minutes for six sessions.
	Multi-Modality Trauma Treatment (MMTT). One study examined Multi-Modality Trauma Treatment (MMTT; March et al., 1998). The study used a pre-post design in a school. March and colleagues' (1998) study occurred in the United States, with the predominant race in the sample being White/European American. The sample involved a mix of female and male participants who had been exposed to a single incident stressor. Only cognitive behavioral techniques were used without parental involvement in treatment. Session length was not reported, and 18 weekly group treatment sessions were provided to participants.
	PARTNERS with Teens. One study examined PARTNERS with Teens (Grefe, 2011). The study used a pre-post design in a university setting. The study occurred in the United States, with the predominant race in the sample being Black/African American. The sample involved only female participants exposed to various traumas. Dialectical Behavior Therapy (DBT) and motivational interviewing were used in addition to cognitive behavioral techniques. Parents were included in treatment. Eighteen individual sessions were provided in Grefe's (2011) study.
	Project Loss and Survival Team (Project LAST). One study examined Project Loss and Survival Team (Project LAST; Salloum & Overstreet, 2008). The study used a pre-post design in the community. The study occurred in the United States, with the predominant race in the sample being Black/African American. The sample involved a mix of female and male participants exposed to traumatic grief. Narrative therapy was used in addition to cognitive behavioral techniques. Parents were included in the treatment. Salloum and Overstreet's (2008) study provided 60-minute group treatment weekly for ten sessions.

	Project Sexual Abuse Family Education (Project SAFE). Hubel and colleagues' (2014) study examined Project Sexual Abuse Family Education (Project SAFE). The study used a pre-post design in a child advocacy center. The study occurred in the United States, with the predominant race in the sample being White/European American. The sample involved a mix of female and male participants exposed to sexual abuse. Parents were included in Project SAFE, which used only cognitive behavioral techniques. The study provided 90-minute group treatment weekly for 12 sessions.
	Real Life Heroes. Kagan and colleagues' (2008) study examined Real Life Heroes. The study used a pre-post design in both residential treatment and in an outpatient mental health clinic. The study occurred in the United States, with the predominant race in the sample being White/European American. The sample involved a mix of female and male participants exposed to various traumatic events. Parents were included in Real Life Heroes, which used only cognitive behavioral techniques. Kagan and colleagues' (2008) study conducted individual sessions, but data on treatment frequency, session length, and session numbers were not provided.
	SAY Group. Sinclair and colleagues' (1995) study examined SAY Group. The study used a pre-post design in a group home. The study occurred in the United States, with the predominant race in the sample being White/European American. The sample included only females exposed to sexual abuse. Parents were not included in SAY Group, a treatment that used only cognitive behavioral techniques. The study provided 20 weekly sessions in a group setting. Session length was not reported.
	STEPS. Bicanic and colleagues' (2014) study examined STEPS. The study used a pre-post design in a community setting. The study occurred in the Netherlands with a female-only sample exposed to rape. Parents were included in this treatment that used only cognitive behavioral techniques. Treatment was provided in 120-minute weekly sessions in a group setting for nine sessions.

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