Development of the Early Childhood Traumatic Stress Screen

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DEVELOPMENT OF THE EARLY CHILDHOOD TRAUMATIC STRESS SCREEN

by

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ABSTRACT
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The study aimed to develop a brief screening instrument to assess symptoms associated with potentially traumatic experiences (PTE) in very young children (under 6). Potential items for the Early Childhood Traumatic Stress Screen (ECTSS) were sampled from each of the major content areas implicated in trauma. The items underwent a principle component analysis, which produced a 34-item screening measure with four reliable factors and one sub-scale assessing response style. All subscales and the overall trauma composite score significantly correlated with pre-established measures of traumatic stress in very young children, and a receiver operating characteristics curve analysis identified a cut-score with good sensitivity and specificity. The ECTSS fulfills an important need as a first-line screener for maladaptive response following a PTE in very young children. The ECTSS is brief, simple to administer, easy to score, and has acceptable reliability and validity. First-line screeners, such as the ECTSS, are a necessary part of multi-stage screening processes that promote early intervention by rapidly identifying children in need of services.

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I dedicate this work to the scholarship of our important field in the hopes that it will allow us to better diagnose and treat young children struggling with trauma exposure.

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Chapter I: Introduction

Trauma refers to an event or circumstance that poses a serious threat to self or others and is coupled with extreme disturbances in behavior and/or mood; however, these disturbances may not be present at the time of the event (APA, 2013). Although trauma can manifest in many different forms, this dissertation study will focus on five major categories of child maltreatment when considering trauma in children including: 1) neglect; 2) physical abuse; 3) sexual abuse; 4) emotional abuse; and 5) witnessing intimate partner violence. The proposed dissertation will address the following core topic areas in childhood trauma: definition, prevalence, risk factors, outcomes associated with trauma exposure, issues in diagnosis with preschool aged children, and a critical review of current trauma assessment measures. The dissertation will also include ethical and legal considerations in assessing early childhood trauma (e.g., responsibility of examiner, reporting requirements).

Unfortunately child maltreatment is not an uncommon occurrence. In fact, the most recent report on child maltreatment from the Department of Health and Human Services found 3.4 million children were referred to Child Protective Services (CPS) for alleged child maltreatment (Child Maltreatment, 2012). Data from the adverse childhood experiences (ACES) study conducted by the Center for Disease Control (CDC) suggested approximately 6 out of 10 individuals experienced an adverse childhood experience (i.e., abuse, neglect, household dysfunction; CDC, 2010a). Annually, abuse and neglect are responsible for the death of over 1600 children a year in the United States, with 70% of these children being under the age of four (Child Maltreatment, 2012). In other words, over four children die *each* day from child maltreatment. Even more alarming is this

number is thought to be a gross underestimation of the actual deaths resulting from child abuse and neglect. Research suggests 50-60% of child maltreatment fatalities are not recorded as such on death certificates and, thus, are not officially counted in child fatality statistics (U.S. Department of Health and Human Services, 2011).

In addition to being potentially fatal, exposure to trauma during childhood places individuals at elevated risks for a number of dysfunctional as opposed to resilient pathways (Bonanno, 2004; De Young, Kenardy, & Cobham, 2011b). The adverse outcomes include disturbances in executive functioning (Polak, Witteveen, Reitsma & Olff, 2012), impairments in IQ and academic performance (Delaney-Black et al., 2002; Jaffee, S. R., & Maikovich-Fong, 2011; Samuelson, Kruger, Burnett, Wilson, 2010), development of psychotic symptoms (Arseneault et al., 2011; Schreier et al., 2009), impairments in stress and coping (Majer, Nater, Lin, Capuron, & Reeves, 2010; Schore, 2001; Teicher, Anderson, & Polcari, 2012), and psychological distress and psychopathology (Fergusson, Boden, & Horwood, 2008; Wright, Crawford, and Del Castillo, 2009). In fact, exposure to trauma in infancy can alter a child's long-term ability to manage stress both affectively and behaviorally (Schore, 2001).

Statement of the Problem

Although the current body of literature related to trauma in children continues to grow, there is a need for an instrument that assesses trauma in preschool-aged children with sound psychometric properties and can be used as a brief screening measure to identify children in need of further evaluation and possible treatment services. Current measures that are used for assessment of trauma in very young children (i.e., under 6

years of age) include: the Child Behavior Checklist (CBCL), Pediatric Emotional Distress Scale (PEDS), Trauma Symptom Checklist for Young Children (TSCYC), Traumatic Events Screening Inventory (TESI), Diagnostic Infant Preschool Assessment (DIPA), Preschool Age Psychiatric Assessment (PAPA), PTSD Semi-Structured Interview and Observational Record for Infants and Young Children (PTSD-SSI-ORIYC), and Young Child PTSD Screen (YCPS). It is important to note these measures address different aims in the assessment of trauma from history of exposure (TESI), symptoms (CBCL, TSCYC), diagnosis (DIPA, PAPA), to screening (YCPS). Each of these measures plays an important role in the assessment of trauma, but each has a different aim. In fact, only one of these instruments, the YCPS, specifically fulfills the role of a brief screener and the psychometric properties for this measure are not well developed. In fact, outside of deriving the cut score, no additional information is provided on the reliability and validity of the measure. With the increasing time constraints of hospital and private practice settings, the need for brief, psychometrically sound instruments is becoming increasingly important.

Purpose of Study

The aim for this dissertation is to address an area of need in the field of early childhood mental health, namely, to develop a new screening instrument to measure symptoms associated with trauma experienced in very young children (under 6). The goal of the dissertation is twofold: First to establish the significance for the creation of a trauma measure for very young children and to build an empirical basis for a new screening measure for the assessment of early childhood trauma symptoms based on the

current literature and; secondly, to detail a methodological plan to guide the development of a new screening measure. For the sake of clarity this new instrument will be referred to as the Early Childhood Traumatic Stress Screen (ECTSS). This measure will ideally be short (i.e., at or below 35 items) and simple enough to score and administer by a variety of mental health professionals. Best practices in assessment include a multi-stage screening process, which includes first line screeners, as a way to efficiently assess children for developmental problems and mental health concerns (e.g., Carter, Briggs-Gowan & Davis, 2004; Loeber, 1990). First line screeners allow quick identification of children in need of further evaluation and possible treatment services. Stated differently, these measures are brief tools used in the first stage of a multi-stage screening process in an effort to reduce the number of children who are in need of mental health services but are identified falsely as not being at risk or are not screened in the first place. These first line screeners play a vital role in early detection and should be short, inexpensive, and easy to administer and score to help promote use among a variety of medical (e.g., pediatrician conducting a well-child exam) and mental health professionals who may have exposure to children with potentially traumatic event (PTE) exposure. If a positive screen is noted, then more intensive testing would be recommended to help clarify the nature of the problem and to decide on a treatment direction.

Significance of Study

There is a significant need for measures that aid in the assessment of traumatic stress in young children, particularly those under the age of six. The need for such measures is highlighted by four widely accepted premises emphasized throughout the

child maltreatment literature: 1) potentially traumatic event (PTE) exposure is common in young children; 2) exposure to trauma in early childhood may have lasting consequences that carry on into adulthood; 3) there are few instruments available to assess traumatic responses in early childhood; and 4) early identification of maladaptive responses after trauma and subsequent treatment is linked to better long-term outcomes. Although the area of preschool PTE assessment (e.g., history, screening, symptom inventory, diagnostic measures) as a whole could benefit from additional research, the area of first line screeners is particularly weak as evidenced by only one screening measure (i.e., Young Child PTSD Screen) with little psychometric information available. First line screeners are particularly important as they provide health care professionals (e.g., psychologists, medical doctors, social workers) with the opportunity to quickly assess potential traumatic stress. These brief screeners help minimize the children who are not screened in the first place for trauma and allow medical professionals to refer out for more intensive testing and potential intervention services if a screener is positive. In short, this measure is intended to help identify a greater number of children who are potentially in need of care but are not being identified.

Research Hypotheses

The following hypotheses will be addressed:

1. The initial set of ECTSS items will demonstrate content validity when examined by clinicians who treat young children with trauma exposure, experts in the area of trauma, and parents.

2. The ECTSS will yield robust factors following a principal components analysis (PCA).
3. Clinically meaningful subscales will be derived and subscale cut-scores will be computed using 1.5 standard deviations above the mean to indicate clinical significance.
4. The subscales will be significantly correlated to each other, and thus, have empirical support for creation of a total trauma composite score.
5. A Receiver Operating Characteristics Curve (ROC curve) will produce an empirical cut-score using TSCYC trauma composite score and the ECTSS trauma composite score.
6. Factors derived from the PCA will be internally consistent as evidenced by strong coefficient alphas.
7. The ECTSS will significantly correlate with pre-established measures of childhood trauma, the Trauma Symptom Checklist for Young Children (TSCYC) and the Pediatric Emotional Distress Scale (PEDS).

Chapter II: Problem in Perspective

Creating a general definition to cover the broad scope of what is captured under the umbrella of "trauma" has proven remarkably difficult from both a research, theoretical, and diagnostic standpoint. When individual trauma is viewed broadly it can be conceptualized a life-threatening event or circumstance involving serious physical injury, or threat of serious injury, personally experienced or witnessed and which produced severe alternations in mood and/or behavior (APA, 2013). In other words, the objective criteria of exposure to an event or circumstance which poses a serious threat to self or others is coupled with the subjective experience of an extreme negative affective or behavioral response. It is important to note that within this framework, not all maltreatment is traumatic. For example, although one child may display subjective experience of extreme negative affective response after a verbal upbraiding, another may not demonstrate this negative affect. Said differently, some children follow resilient pathways despite maltreatment while others go on to develop a traumatic response that in turn can aid in the development of psychopathology. Thus, this review will label these events as potentially traumatic experiences (PTE).

When the definition of PTE is broken down further it can be classified by type (e.g., physical abuse, illness) or severity level (i.e., complex, simple). Many different types of PTE exist such as neglect, physical, sexual, and emotional abuse, exposure to a disaster, accidents, war/terrorism, illness, injury, or sudden loss of a loved one (Alisic, Jongmans, Wesel & Kleber, 2011; Arseneault et al., 2011). A PTE can also be classified as complex. Complex PTEs can be cumulative (repeated victimization) and/or multifaceted

(a combination of several traumatic experiences) (Ford, Chapman, Connor, Cruise, 2012).

Particular attention should be given to the importance of understanding and defining specific types of trauma (e.g., neglect, physical abuse). These definitions are important in that they help identify potentially traumatic events (PTE). For example, at what point does parental discipline cross over to physical abuse or neglect? Additionally, having an understanding of these parameters can help researchers and policy makers quantify these terms and their potential detriment to the individual and create a picture of the overall effect traumatic exposure has on society (e.g., through cost benefit analyses).

The federal government addresses definitions for sexual abuse and the special cases of neglect related to withholding or failing to provide medically indicated treatment in The Federal Child Abuse Prevention and Treatment Act (CAPTA), which was reauthorized in 2010 (US Department of Health and Human Services, CAPTA, 2010). The states, however, are responsible for defining other types of maltreatment such as physical abuse, neglect, or emotional abuse. States receiving CAPTA funding must adhere to federally set minimum standards regarding child abuse and neglect which include: "1) Any recent act or failure to act on the part of a parent or caretaker, which results in death, serious physical or emotional harm, sexual abuse or exploitation; or 2) an act or failure to act which presents an imminent risk of serious harm" (US Department of Health and Human Services, CAPTA, 2010, p. 6). This definition leaves significant power up to the state to define maltreatment in more specific terms.

Definition of Terms

The proposal will focus on five major categories of child maltreatment when considering trauma in children including: 1) neglect; 2) physical abuse; 3) sexual abuse; 4) emotional abuse; and 5) witnessing intimate partner violence. The information on specific definitions of maltreatment is not intended to be exhaustive (i.e., in breadth of definition or complete list of specific types). However, it does provide a framework to understand prevalent forms of PTEs. There are some definitional inconsistencies/debates among specific PTEs discussed in the literature, which are presented in the review.

Neglect

Physical neglect can be thought of as a caretaker who fails to meet a child's physical, intellectual, or emotional development (Polonko, 2006). Physical neglect for younger children tends to focus more on the caregivers inability to provide for the child's basic needs (e.g., food) whereas emotional neglect refers to passive or aggressive dismissal of child's emotional needs (e.g., comfort; Erickson & Egland, 2002). For example, emotional neglect of an infant could be conceptualized as a caretaker's conscious or unconscious inattention to the child's desire for comfort and affection. Some states recognize parental substance use as a form of physical neglect or physical abuse. These circumstances normally involve "prenatal exposure to illegal drugs or other substances (14 states), manufacture of a controlled substance in the presence of a child or on the premises occupied by a child (10 States), allowing a child to be present where the chemicals or equipment for the manufacture of controlled substances are used or stored (three States), selling, distributing, or giving drugs or alcohol to a child (seven states and

Guam), use of a controlled substance by a caregiver that impairs the caregiver's ability to adequately care for the child (seven States)" (US Department of Health and Human Services, Definitions of Child Abuse and Neglect, 2011, p.10). It is important to recognize that with the exception of medical neglect, the federal government leaves considerable control up to the states to define this construct. Even within federal laws surrounding medical neglect there are exceptions regarding religious practices that exclude certain individuals from facing prosecution regarding withholding treatment from infants with life-threatening conditions (US Department of Health and Human Services, CAPTA, 2010).

Emotional neglect notably has considerable debate surrounding whether this form of abuse should be conceptualized using maltreating behavior (e.g., denial of comfort) or the consequence of this behavior for the child (e.g., psychological distress), or if a combination of both considerations (action and consequence) should be considered (Polonko, 2006). For example, if the caretaker displays a pattern of inattentiveness (i.e., the action), but the child does not appear to suffer negative effects (i.e., the consequence) is the action still considered maltreatment? Even *if* it was determined the current pattern of behavior did not cause negative consequences there is still the question of at what point and to what extent someone should intervene to prevent potential harm?

The answer to the question on how emotional neglect should be defined is likely rooted in a larger argument that centers on differing philosophies on treatment versus prevention models. Individuals from a prevention standpoint would advocate for early intervention regardless of current consequences to the child (e.g., lack of behavioral change); whereas, from a treatment standpoint the adverse consequences would need to

be present (i.e., you need to treat something). In short, a prevention approach considers the use of emotionally maltreating behavior sufficient to qualify as a PTE whereas a treatment approach would consider this behavior necessary but insufficient to constitute emotional neglect.

Physical Abuse

It is important to note that there is no consensus on the definition of physical abuse among researchers or legislation (Rodriguez-Srednicki & Twaite, 2004; Whitney, Tajima, Herrenkohl, & Huang, 2006). The US Department of Health and Human Services reported physical abuse is *generally* defined as "any non-accidental physical injury to the child and can include striking, kicking, burning, or biting the child, or any action that results in a physical impairment of the child" (Definitions of Child Abuse and Neglect, 2011). According to the US Department of Health and Human Services physical abuse refers to non-accidental physical injury.

However, this definition is still not clear-cut. Whitney, Tajima, Herrenkohl, and Huang, (2006) investigated child welfare practitioners' ratings of the severity of parental discipline practices and found ratings varied by the type of act, age of the child, and by chronicity. They argued while some discipline forms (e.g., burning a child with a cigarette) are clearly abusive, regardless of the age or the frequency of the act, others (e.g., shaking a child), may be thought of by some as non-abusive if they are directed to an older adolescent child or occur as a one-time event with a school-age child. The definition of what constitutes physical abuse also may vary by culture. For example, Straus and Mathur (1996) found notable differences among different racial/ethnic groups,

with African Americans showing a significantly less decrease in their approval of corporal punishment than Caucasians or other racial groups.

Sexual Abuse

Sexual abuse is one of the few forms of child maltreatment specifically addressed by the federal government. CAPTA defines sexual abuse as, "The employment, use, persuasion, inducement, enticement, or coercion of any child to engage in, or assist any other person to engage in, any sexually explicit conduct or simulation of such conduct for the purpose of producing a visual depiction of such conduct; or the rape, and in cases of caretaker or interfamilial relationships, statutory rape, molestation, prostitution, or other form of sexual exploitation of children, or incest with children" (US Department of Health and Human Services, CAPTA, 2010, p. 32).

Even in this seemingly straightforward definition ambiguity still exists. Haugaard (2000) pointed out that although some behaviors with a child would clearly be considered sexual abuse (e.g., intercourse), there is less agreement about other behaviors, such as bathing children or sleeping with them, in which case intent of the adult must be assessed. Similarly to physical abuse, the age of the child and context of the behavior needs to be considered. For example, a father bathing an infant would likely not be considered sexual abuse; however, a father bathing his teenage daughter is less clearly defined. At what point does this formally normative behavior (bathing a child) cross the line over to abusive behavior? Context also complicates the definition. Consider again the scenario of the father bathing his teenage daughter, which some individuals could argue crosses the line into sexually abusive behavior. However, if the teenage girl were

in a car accident that left her unable to bathe herself, the father's actions would likely not be considered sexual abuse.

Emotional Abuse

Unlike physical or sexual abuse, emotional abuse leaves less tangible physical evidence (e.g., lack of bruises). This often makes it more difficult for individuals to identify or measure the harm caused by this often invisible form of abuse. In fact, although half of the cases referred to child protective services (CPS) qualify as cases of emotional abuse it is seldom the focus of the investigation (Trickett, Mennen, Kim, & Sang, 2009).

The definition of emotional abuse has focused around an individual's rejecting, isolating, terrorizing, ignoring, corrupting, verbally assaulting, and overpressuring behaviors (Hamarman, Pope, & Czaja, 2002). In general, state laws focus on "injury to the psychological capacity or emotional stability of the child as evidenced by an observable or substantial change in behavior, emotional, response, or cognition" (US Department of Health and Human Services, Definitions of Child Abuse and Neglect, 2011, p. 3). In addition to establishing that observable psychological injury has taken place, additional consideration has been given to the intent of the perpetrator as a method to evaluate suspected cases of emotional abuse (Hamarman & Bernet, 2000). In other words, evaluating the intent of the perpetrator and the consequences of the perpetrator's actions is important for establishing that emotional abuse has taken place.

Witnessing Intimate Partner Violence

Intimate partner violence is a broader term that also encompasses domestic violence. The Center for Disease Control (CDC) defines intimate partner violence as "physical, sexual, or psychological harm by a current or former partner or spouse" (CDC, 2010b). In general domestic violence is defined as "attempting to cause or causing bodily injury to a family or household member or placing a family or household member by threat of force in fear of imminent physical harm" (US Department of Health and Human Services, Definitions of Domestic Violence, 2011, p. 1). Thus, intimate partner violence is more inclusive as individuals such as non-household member partners or ex-spouses are included in the definition. The CDC (2011b) reported that there are four main types of intimate partner violence including physical violence, sexual violence, threats of physical or sexual violence, and psychological/emotional violence.

Although intimate partner violence is not directly stated in law, domestic violence is addressed. Forty-six states define domestic violence in their civil statutes (US Department of Health and Human Services, Definitions of Domestic Violence, 2011). Unfortunately, only 22 states address the issue of domestic violence within their child abuse and neglect reporting laws.

Prevalence

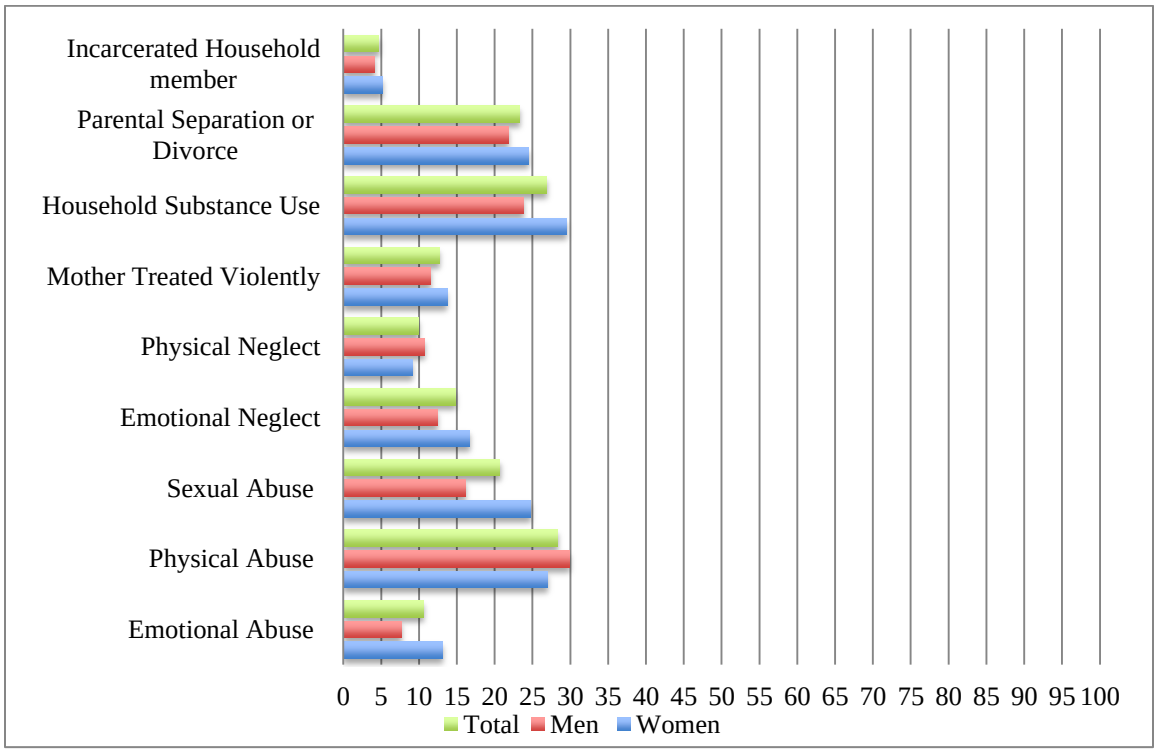
In the most recent Child Protective Services (CPS) report approximately 3.7 million children were identified as potentially maltreated in a year (U.S. Department of Health and Human Services, 2012). Of these children, there were 676,569 unique cases of substantiated child maltreatment. Said differently, this means for every 1000 children 9.1

are victims of substantiated child maltreatment (U.S. Department of Health and Human Services, 2012). While this number is alarming it is important to note that the actual number of children who experience childhood maltreatment is likely much higher. In fact, data from the adverse childhood experiences (ACE) study suggested for every 1000 people 640 have experienced an adverse childhood experience (i.e., abuse, neglect, household dysfunction; CDC, 2010a). The group at highest risk is children one to three years of age, which accounted for 34 percent of all referrals to CPS (U.S. Department of Health and Human Services, 2012). Children ages four to seven years old (23.3 percent) made up the second highest at-risk group. This maltreatment can have fatal consequences. Over the course of 5 years (2007-2011) the government collected data, a reported 8,050 children died as a result of childhood maltreatment (U.S. Department of Health and Human Services, 2012). Of deaths, children younger than four years of age accounted for 80.8 percent of all child fatalities.

Childhood PTE exposure among the general public is thought to range anywhere from approximately 65 to 80% (CDC, 2010a; Finkelhor, Ormrod, & Turner, 2009). A large survey (n = 17, 337), reported by the CDC, gathered information on adverse childhood experiences. The overarching categories included: abuse (emotional, physical, and sexual), neglect (emotional and physical), and household dysfunction (mother treated violently, household substance use, household mental illness, parental separation or divorce, and incarcerated household member) (CDC, 2010a). Approximately 64% of the participants had experienced at least one adverse childhood experience, with women at slightly higher risk (approximately 66%) compared to their male counterparts (62%). The most common types of trauma included: physical abuse (28.3%), household

substance use (26.9%), parental separation or divorce (23.3%), sexual abuse (20.7%), and household mental illness (19.4%). The totals for each category broken down by gender and overall totals out of 100% are presented in Table 1which was adapted from data found in the CDC's ACE report (2010a).

Figure 1. Trauma Prevalence Rate by Type



Similarly, Finkelhor, Ormrod, and Turner (2009) conducted a study with a national sample of 1,467 children aged 2-17 recruited through random digit dialing and assessed via telephone interviews (with caretakers and youth themselves) about a comprehensive range of 33 types of victimization experiences in the previous year and at any time in their lives. They found nearly 80% of the children and youth reported at least

one lifetime victimization and found the mean number of lifetime victimizations was 3.7 and the median 2.6.

Koenen, Roberts, Stone, and Dunn (2010) were interested in examining prevalence rates of adverse childhood experiences in younger children (i.e., under the age of 13). They conducted a survey (n = 5,692) of childhood events that occurred before the age of 13 and found that 38.48% of those surveyed had experienced a trauma. The most common types of traumatic experienced before the age of 13 was witnessing physical fights at home (12.31%), sexual violence (8.62%), and experiencing the death of someone close (7.9%).

In self-reported data physical abuse tops the list as the most common form of childhood maltreatment; however, case reports to CPS continually list neglect as the top form of childhood maltreatment. Of the over 2 million children reported in 1997 as survivors of trauma, 57% involved neglect, 24% involved physical abuse, 12% involved sexual abuse, 6% involved emotional maltreatment, and 13% involved other maltreatment (Erickson & Egeland, 2002).

Common characteristics of perpetrators reveal the person abusing the child is most often the parent. In fact, over 80% of the perpetrators were parents, 5.9% were relatives other than parents, and 4.4% were unmarried partners of the parents (U.S. Department of Health and Human Services, 2012). This suggests the majority of the perpetrators (approximately 90%) are someone the child knows and likely trusts.

Theoretical Perspectives on Human Development

Historically the field of psychology has struggled integrating both theory and empirical investigation, with empirical studies typically glossing over the theoretical implications (Benight, 2012; Lewis, 2000). In order to understand traumatic response it is important to have a conceptual framework in which normal development is thought to occur. Although this framework is not meant to be exhaustive, theoretical perspectives will be used to enhance understanding of the development of risk and resilience in human development and trauma responses with particular attention to a dynamic systems theory (DST) and stress-sensitization theory (SST; i.e., "kindling theory"). DST will be used to garner a conceptual framework of human development and SST will be used to further conceptualize traumatic response under the umbrella of a DST framework.

DST is based in developmental biology and mathematics and takes a biopsychosocial approach to human development (Keenan, 2010; Thelen & Smith, 2006). There are two overarching principles in the DST developmental framework. The first is human beings are self-organizing systems that do not follow a predetermined direction but are the result of continual processes and feedback both internally (e.g., genetics, nervous system responses) and externally (i.e., environmental influences; Keenan, 2010). This inherent complexity in self-organization leads into the second overarching principle: human development is acutely sensitive to environmental influences.

Human development and change can be conceptualized through a DST lens. At the simplest level, self-organization results from the formation and regular activation of neuronal pathways; this phenomenon is well studied in the area of neuroscience (Keenan, 2010). The process of activation and connection also occurs on larger levels through

internal and external processes within a person. These processes are either reinforced or constrained through positive and negative reinforcement (both internal and external). There are numerous systems and subsystems that comprise an individual from biological systems (e.g., central nervous system) to psychosocial systems (e.g., attitude, cognition) nested within each other and interacting with each other (Keenan, 2010). Three internal processes continually exert influence on the stability and change of a system/subsystem: the history of the system/subsystem, circular causality, and feedback (Keenan, 2010; Lewis, 2002; Thelen & Smith, 2006). History of the system/subsystem refers to DST's focus on behavior which is conceptualized as the result of multiple influences. Each of these influences has a history and, importantly, it is not possible to fully disentangle the history of each of these contributing forces from the way they are observed in their present state (Thelen & Smith, 2006). Circular causality refers to the multidirectional influences of system levels (e.g., psychosocial systems, biological systems) on one another (both top-down and bottom up processes) between all subsystems (Keenan, 2010; Lewis, 2002). Feedback refers to the continual flow of information that either receives amplification or constraint through negative or positive reinforcement (either through external or internal processes).

Self-organizing systems often become more complex with time (Keenan, 2010; Lewis, 2002). This complexity allows for more organization and thus a better ability to carry out more sophisticated processes. For example, human communication, which begins in infancy with the child mimicking words, sounds, and gestures, continues to develop into adulthood with vocabulary development and the ability to use language and nonverbal gesturing to successfully communicate the speaker's point in a variety of social

contexts (Lewis, 2000). When environmental influences are presented the individual can respond with existing subsystem schemas, modify the existing subsystem, or at points of instability when thresholds/tipping points are reached, a subsystem can be transformed (Keenan, 2010).

Before system transformations/changes are discussed in greater detail it is first important to understand how processes are maintained. In DST each process "occurs over time, showing a course of activation, peak, and decay, and with various levels of stability associated with each point in time, but every act changes the overall system and builds a history of acts over time" (Thelen & Smith, 2006, p. 277). Said differently, neural pathways that frequently wire together fire together. In DST stability of processes are conceptualized as influenced by the repetition of the process that results in diminished thresholds for activation of a process (Thelen & Smith, 2006).

System transformations (referred to by Lewis 2000 as global reorganization) occur at phase transitions, which are points of instability where old processes break down and new ones emerge. In Lewis's (2000) conceptualization of human development these phase transitions are both global and abrupt and system components "cannot remain at in-between states of partial reorganization" (p. 39). In other words, levels of complexity can appear discontinuously (e.g., abrupt increase in language abilities) and development has the potential to be strongly influenced either adaptively or maladaptively at these tipping points. Thus, an individual may be particularly sensitive when certain periods of development are occurring. For example, exposure to trauma in infancy has been suggested to alter the individual's long-term ability to manage stress both affectively and

behaviorally because it occurs at a critical period of growth for the limbic system (Schore, 2001).

To summarize DST, in contrast to the way much of empirical research is conducted, DST does not try to isolate parts (variables) in order to understand a phenomenon. DST focuses on interactions between multiple parts that form a coherent but often complex whole; importantly, these parts cannot be fully removed from the context of the whole and must be studied and understood in the larger context (Keenan, 2010; Thelen & Smith, 2006). In other words DST focuses on the gestalt of a phenomenon and not on the parts. Instead the focus is on the interplay of "complex and cascading process" (Thelen & Smith, 2006, p. 263). Each of these processes has a history that has to be considered when viewing human development and behavior in its current state.

SST or "Kindling Theory" takes a neurobiological approach to understanding trauma responses and complements the DST framework. Kindling theory is well established in the area of depression and is beginning to garner a research basis in trauma (Benight, 2012; Grasso, Ford, Briggs-Gowan, 2013; Schumm, Stines, Hobholl, Jackson, 2005). SST theorized trauma exposure could sensitize stress related neural pathways through repeated activation (e.g., of intrusive thoughts/feeling surrounding the trauma). Thus, the threshold for experiencing adverse reactions to stressful life events is diminished. In other words, SST asserts that individuals who experienced childhood maltreatment are particularly vulnerable to the negative impact of ongoing life stressors and are doubly burdened by both the initial trauma and their reduced ability to cope with ongoing stressors (Schumm, Stines, Hobholl, Jackson, 2005). However, a major pitfall in

using this theory without the context of a DST framework is that it fails to adequately explain individuals who are resilient in the face of potentially traumatic experiences. More specially, it does not consider the interactions and potential mediating factors supplied by a biopsychosocial framework (e.g., the interaction of biological, psychological, and social factors). Within the DST framework, individual differences are mediated by specific internal and external factors related to PTE response (e.g., genetic predisposition, comorbid mental health concerns, parent-child relationship).

Although recent neuroscience research literature suggested findings grounded in DST were promising (e.g., Cozolino, 2006), Keenan (2010) cited several limitations that should be noted for using DST as a theoretical framework: "1) As a newer set of principles, theoretical development and empirical research are still ongoing, and 2) as a process model, DST does not specify specific variables, levels, or areas of focus" (Keenan, 2010, p. 1040). Thus, the theory focuses on the description and development of pathways and trajectories. DST focuses on principles of self-organization in order to provide an explanatory framework for human development and change.

In order to use DST as a framework for understanding traumatic response consideration must be given to specific internal and external processes of interest. The next few sections will focus on risk and resilience factors in childhood trauma. It should be noted that many of the reviewed studies use models that do not always consider unique interactions (e.g., simple regression models) as opposed to more complex models that may better consider these complex processes (e.g., structural equation models, latent growth mixture modeling). However, given that many studies are not conducted this

way, studies were not excluded on this basis alone as they still provide valuable information on the growing area of childhood trauma.

Resilience After Trauma

Although not all individuals who experience trauma have the same outcome, research suggests the experience of severe distress after trauma does not appear to be a random phenomenon (Alisic, Jongmans, Van Wesel, & Kleber, 2011; Smith-Bell, Burhans, & Schreurs, 2012). Trajectory research suggests that response to trauma typically follows four prototypical paths: chronic dysfunction, gradual recovery, delayed reactions (i.e., sub-threshold PTSD worsening over time), and stable resilience (Bonanno & Mancini, 2012). Bonanno and Mancini (2012) suggests that trauma does not occur as a single homogeneous distribution of change over time (e.g., even progression of deterioration in functioning) and calls into question the traditional approach of viewing trauma outcomes in terms of presence or absence of psychopathology (e.g., PTSD). Their research suggests the response to trauma is rather heterogeneous and most individuals follow a resilient pathway (Bonanno, 2004; Bonanno & Mancini, 2012). Santiago and colleagues' (2013) findings provided further support for Bonanno's (2004) and Bonanno and Mancini's (2012) findings that the majority of individuals are resilient. Although it should be noted that they used presence or absence of pathology in defining impaired versus resilient individuals. They found the mean prevalence rate of PTSD across 58 longitudinal publications featuring 35 unique subject populations (e.g., assault, terrorism) was 28.8% at one month and 17.0% at twelve months after the trauma. Interestingly the typical trajectory for PTSD development differed for intentional (e.g.,

assault) versus non-intentional trauma (e.g., natural disaster). Individuals who experienced intentional trauma exhibited *higher* PTSD median prevalence rates as time progressed from the one, three, six, and twelve-month markers, 11.8%, 17.1%, 19.0%, 23.3%, respectively. In contrast, individuals that experienced non-intentional trauma exhibited generally *lower* PTSD median prevalence rates as time progressed from the one, three, six, and twelve-month markers, 30.1%, 17.8%, 12.9%, 14.8%, respectively. This suggests that individuals who experience intentional trauma, such as childhood maltreatment, versus unintentional traumas could be on different pathways with respect to PTSD development. This also highlights the importance of viewing prevalence rates in context of time since traumatic occurrence.

Approximately one-third of individuals exposed to intentional trauma developed PTSD in the first year. Of these individuals, one third went into remission after three months, 39% continued on a chronic course of PTSD, and 3.5% had delayed onset (i.e., symptoms emerged after three months; Santiago et al., 2013). This delayed onset trajectory has also been found to have a relatively high level of PTSD symptoms following the immediate aftermath of the traumatic stressor as compared to individuals who follow reliant pathways (Buckley, Blanchard, & Hickling, 1996). However, it is important to note that even individuals who follow the resilient pathway still may experience some form of stress reaction following the trauma; however, this reaction does not significantly inhibit their level of functioning (Bisconti, Bergeman, & Boker, 2006; Bonanno & Mancini, 2012).

The area of resilience research in trauma is still in its infancy and some have argued until recently that the relative absence of traumatic reactions was an aberrant

response rather than the norm (Bonanno, 2004). In fact, it appears that the response to traumatic events normally follows a resilient pathway (i.e., maintains normal functioning with little disruption; Bonanno & Mancini, 2012). Bonanno's work, particularly his 2004 study, which re-conceptualized resilience as a normal rather than an aberrant response to trauma was considered groundbreaking in the field of trauma. In fact his 2004 study was first printed in *The American Psychologist*, was reprinted in 2008 in the *Journal Psychological Trauma: Theory Research, Practice and Policy*, and was focus of a series of invited discussions and critiques by other trauma researchers that was published in 2005 in the *American Psychologist*. It is clear this article made a large impact in the area of trauma research and among other experts in the field (e.g., Linley, & Joseph, 2005) and deserves particular consideration when conceptualizing PTE responses. However, although this finding is exciting as it suggests that trauma typically follows a resilient pathway more research is clearly needed to 1) replicate findings; and 2) to understand what factors place individuals on adaptive pathways verses maladaptive pathways.

Risk Factors

In order to have a clearer picture of what may place children on maladaptive pathways it is important to understand the external and internal factors that have empirical support for putting children at risk for developing a traumatic response. In other words, this highlights the importance of understanding potential risk factors (e.g., exposure during early childhood) that place individuals on maladaptive pathways after traumatic exposure and also increase risk for PTE occurrence as well as protective factors (e.g., good parent-child relationship, social support) that correspond with resilient

pathways (Alisic et al., 2011; Bonanno & Mancini, 2012; Polak et al., 2012). Risk factors that were frequently presented in trauma literature and had good empirical support for inclusion in this review included: exposure during childhood, co-morbid mental health concerns, parental trauma exposure, gender, and past trauma exposure. An exploration of risk factors is provided to highlight individuals who may be at increased risk for PTE exposure and poor outcomes related to PTE exposure.

Exposure During Childhood

As previously discussed responses to traumatic events normally follow a resilient pathway. However, there are periods of development that place individuals at higher risk for a dysfunctional pathway such as trauma exposure during childhood (Bonanno, 2004; De Young, Kenardy, & Cobham, 2011b). In fact, children as young as one year of age have exhibited trauma symptoms in response to intimate partner violence, with a positive association between severity of the violence and trauma symptoms exhibited by the child (Bogat, DeJonghe, Levendosky, Davidson, & Von Eye, 2006). Childhood trauma exposure is thought to be a complex issue in comparison to trauma experienced during adulthood in that it may occur alongside crucial periods in social-emotional and brain development (Belsky & de Hann, 2011; Bonanno & Mancini, 2012; Schore 2001; Roth, David, & Sweatt, 2011; De Young, Kenardy, & Cobham, 2011b). Although adults may have developed a neural framework in which to process the trauma (e.g., view the trauma event as an anomaly), children are still developing their schemas and neural networks.

Comorbidity

Comorbid problems in mental health and development disabilities are cited as potential risk factors for PTE (Alisic et al., 2011; Ford et al., 1999; Jaudes, & Mackey-Bilaver, 2008; Reading, 2006). In particular, comorbid behavioral mental health conditions appear to place young children at substantially elevated risk for PTE exposure (Ford et al., 1999; Jaudes & Mackey-Bilaver, 2008; Turner, Vanderminden, Finkelhor, Hamby, & Shattuck, 2011). For example, Ford et al. (1999) looked at a sample of children (n = 165) ages 6 to 17 years (M = 11.5, SD = 3.4) and found that children with Attention Deficit Hyperactivity Disorder (ADHD) or Oppositional Defiant Disorder (ODD) had a significantly greater risk of experiencing victimization trauma compared to children with an adjustment disorder. Furthermore, this risk was exacerbated in children that were co-morbid for both ADHD and ODD (Ford et al., 1999). This finding is not surprising given that research suggests that children with disabilities (including mental health disabilities) are, in general, three to four times more likely to experience childhood maltreatment than their typically developing peers (Murphy, 2011). Additionally, children with co-morbid mental health problems are significantly more likely to die from their abuse than children without co-morbid mental health problems (Berson, & Yampolskaya, 2013)

Jaudes and Mackey-Bilaver's (2008) study used a sample of Illinois children who were continuously enrolled (through the age of three) in Medicaid, a public health insurance program for low-income families. The study used insurance claims data and ICD-9-CM health codes to identify children with one or more of three chronic conditions: chronic physical illness, developmental delay/mental retardation, and behavior/mental

health conditions. Among children under age six, 24.1% had chronic physical health conditions, 6.1% had behavior/mental health conditions, and 4.2% had developmental delay/mental retardation. Overall maltreatment rate was reported as 11.7% at age six. Children with behavior/mental health conditions were 1.95 times more likely than children without behavior/mental health conditions to be victims of child abuse or neglect. Children with chronic physical health conditions had a slightly elevated risk and were 1.1 times more likely to be maltreated ($p \leq .001$). In contrast, children with developmental delay/mental retardation were not at an increased risk of maltreatment. Children with a behavioral mental health conditions and PTE exposure before age three were ten times more likely to be maltreated again (relative risk of 9.2, $p \leq .0001$). To summarize, behavioral mental health conditions placed low-income children under age six at the highest risk for PTE exposure. Developmental delay/mental retardation, however, did not appear to increase the risk of maltreatment, while chronic physical health conditions increased the risk slightly among this group of children.

Although this study did not note elevated risk for PTE exposure for children with developmental delays, other research has noted that risk of sexual abuse among children (followed from birth to age 19) with developmental delays is 6 or 7 times higher than typically developing peers (Reading, 2006). It is important to note that the sample used in Jaudes and Mackey-Bilaver's (2008) study did not include children over the age of six. However, children are most likely to experience sexual abuse between the ages of 7 and 13 (Finkelhor, Dziuba-Leatherman, 1994), which may partially account for the apparent discrepancy in findings.

In order to get a broader picture of the long-term variables that predict PTSD following childhood PTE exposure a meta-analysis of 40 longitudinal studies was conducted (Alisic et al., 2011). Results indicated five out of the 20 indicated variables were found to be significant predictors, with moderate to strong effect sizes in children including: depressive symptoms (weighted r = .48), anxiety (weighted r = .44), acute stress symptoms (0-1 months post trauma; weighted r = .51), short term posttraumatic stress symptoms (1-3 months post trauma; weighted r = .56) and parental posttraumatic stress symptoms (weighted r = .34). It is important to note that of these five predictors, two of them (i.e., depression and anxiety) were directly related to co-morbid mental health functioning. However, there is a paucity of research that examines if these diagnoses were present before or after the onset of trauma.

Past Trauma Exposure

PTEs tend not to occur in isolation and the experience of one PTE is often linked to the experiencing of subsequent PTEs. In fact the national ACES survey found that traumas tended not to occur in isolation and instead often occurred in clusters (CDC, 2010a). For example, high rates of comorbidity were noted between emotional abuse and household substance use. A 15 year longitudinal study that followed 89 children who were survivors of severe childhood sexual abuse found that compared to their demographically matched non-abused peers, they were more likely to experience physical assault, 22% and 10%, respectively and more likely to experience subsequent sexual assaults 47% and 27%, respectively (Barnes, Noll, Putman, Trickett, 2009). In other words, survivors of childhood sexual abuse females were almost twice as likely to

have experienced sexual re-victimization (odds = 1.99 ± 2.79, $p < .05$), and physical re-victimization (odds = 1.96 ± 2.58, $p < .05$) as compared to victimization rates reported by comparison females. Holt, Buckley, and Whelan (2008) conducted an extensive search of psychology databases in the past 11 years (1995-2006). This literature was selectively organized and analyzed according to the four domains (i.e., domestic violence exposure and child abuse; impact on parental capacity; impact on child and adolescent development; and exposure to additional adversities). Results indicated that children and adolescents living with domestic violence were at increased risk of experiencing emotional, physical and sexual abuse, developing emotional and behavioral problems, and more likely to face other adversities in their lives (Holt, Buckley, & Whelan, 2008).

Similarly, Widom, Czaja, and Dutton (2008) examined childhood physical abuse, sexual abuse, and neglect and found that exposure to these PTEs lead to an increased vulnerability for subsequent re-victimization in adolescence and adulthood. Participants in the study had documented cases of childhood physical abuse, sexual abuse and neglect and were compared to a matched control group (by gender and race/ethnicity). Both groups were interviewed in-person (mean age = 39.5 years) to assess lifetime trauma and victimization history. Results indicated abused and neglected individuals reported a higher number of traumas and victimization experiences than controls. All types of childhood maltreatment in the study (i.e., physical abuse, sexual abuse, and neglect) were positively related to an increased risk for lifetime re-victimization.

Taken together this research suggests there is a strong relationship between past PTE exposure and potential for future PTE exposure. This is a particularly troubling finding because the total number of PTEs is highly predictive of symptoms of current

distress (Finkelhor, Ormrod, & Turner, 2009). Although the link between past PTE exposure and future PTE exposure is well noted, the reasons behind this link are not well understood. It could be that the environment places individuals at increased risk for future PTEs. For example, a parent who abuses alcohol (a drug that lowers inhibition) may be more likely to engage in verbally or physically aggressive behaviors (e.g., emotional abuse, child physical abuse). It could also be that individuals who have experienced PTEs disproportionally place themselves in situations that are "high risk" (e.g., selecting a partner that reminds them of their abuser) compared to those without PTE exposure.

Parental Trauma Exposure

Parental posttraumatic exposure appears to be a significant risk factor for negative outcomes for children exposed to trauma (Bogat, Dejonghe, Levendosky, Davidson, & Von Eye, 2006; Alisic et al, 2011; De Paul & Domenech, 2000; Scheeringa, Myers, Putnam, & Zeanah, 2015). In fact, parental posttraumatic stress symptoms have been shown to be a significant predictor of long-term PTSD symptoms in children across multiple studies (Alisic et al., 2011). Additionally, when mothers with PTE exposure and PTSD symptoms engage in avoidance style coping the relationship for child PTSD symptom expression is stronger, with more symptom expression in young children (Scheeringa, Myers, Putnam, & Zeanah, 2015).

This risk has been suggested to be exacerbated when previously traumatized mothers give birth during adolescence when compared to their demographically matched counterparts (i.e., location, income, education level, and number of children) who give

birth in adulthood. DePaul and Domenech (2000) conducted a longitudinal study of primarily urban adolescent (n = 24; M =18.7; SD = 2.9) and adult (n =24; M = 27.8; SD = 3.9) mothers to examine the role that adolescent motherhood and past trauma (experienced by mother) played in predicting childhood abuse. Although adolescent and adult mothers showed no differences in memories of physical or emotional abuse, adolescent mothers were significantly more likely to abuse their children and were more likely to report higher levels of depression.

Interestingly, maternal and infant trauma symptoms were also significantly related to severity of exposure to intimate partner violence (Bogat, Dejonghe, Levendosky, Davidson, & Von Eye, 2006). In fact, an infant's response to trauma was negatively amplified (i.e., endorsement of more trauma symptoms) when the adult mother's response to trauma was elevated. This may suggest that when infants witness severe intimate partner violence, they also experience an additive life stressor (i.e., elevated distress levels from their mother) that appreciably elevates their trauma symptoms.

It is not clear from the research on parental trauma how much this risk factor is the result of environmental factors and how much may be due to genetic factors (i.e., tendency for maladaptive response following PTE exposure). It is likely that a combination of both is at play, meaning a predisposition for maladaptive response after trauma and co-occurring adverse life circumstances are likely influencing PTE exposure in offspring of parents with past PTE exposure.

Gender

Gender has also been suggested to plays an important role in certain trauma exposures. The CDC (2010a) found that rate of exposure to sexual violence and for witnessing physical violence in home was significantly higher for females than their male counterparts. Lily and Valdez (2011) found that women were at higher risk for both childhood and adolescent/adulthood interpersonal trauma (e.g., sexual assault, physical abuse, and sexual abuse). Results indicated that exposure to interpersonal trauma predicted PTSD symptom development. Additional post hoc analyses revealed exposure during childhood predicted significantly more PTSD symptoms when compared to adolescent/adulthood exposure and no-exposure groups. This suggests younger females (i.e., below the age of 13) with interpersonal PTE exposure may be at elevated risk for developing PTSD compared to males or their older adolescent counterparts.

Protective Factors

Child-Caregiver Relationship

Quality of the parent-child relationship is an important factor that can serve a protective role in trauma exposure and PTSD symptomatology. In fact, the quality of the parent child relationship is often inversely related to PTE exposure and development of psychopathology (Fergusson, Boden, and Horwood, 2008; Milot, St-Laurent, Ethier, & Provost, 2010).

Milot, St-Laurent, Ethier, and Provost (2010) conducted a study on 33 neglected and 72 non-neglected children (mean age = 60 months). Neglected children were

selected from Child Protective Services (CPS) agencies and were confirmed cases. Each of the parents filled out the Trauma Symptom Checklist for Young Children (Briere, 2001), the Child Dissociative Checklist (Putnam, Helmers, & Trickett, 1993), and the mother-child affective commutation measure (Moss, Rousseau, Parent, St-Laurent, and Saintonge, 1998). The quality of the mother-child communication was assessed during an unstructured task in a clinical lab setting. Results indicated that the quality of mother-child-communication was lower in neglected children. Additionally the researchers found that quality of the mother-child communication predicated the teachers' report of PTSD as assessed by the Trauma Symptom Checklist for Young Children over and above child neglect status. In other words the unique variance (i.e., variance not shared with previously entered variables) of the mother-child communication was significant.

Fergusson, Boden, and Horwood's (2008) study examined the link between exposure to childhood sexual and physical abuse and mental health issues. They tracked a birth cohort of over 1,000 New Zealanders until the age of 25. Their results revealed that after controlling for social, family, and individual factors the associations between child physical abuse and mental health outcomes reduced to the point of statistical non-significance. This suggests that the parent child relationship may play an important role in mediating maladaptive traumatic responses in the case of physical abuse. Unfortunately this finding did not hold for children who were survivors of childhood sexual abuse. In fact, even after controlling for social, family, and individual factors, individuals with childhood sexual abuse had rates of mental disorders that were 2.4 times higher than their non-exposed peers.

The link between the parent-child relationship and maladaptive functioning has also been explored for children who have witnessed domestic violence. Graham-Bermann, Gruber, Howell, and Girz (2009) evaluated the social and emotional adjustment of 219 children in families with varying levels of intimate partner violence using a model of risk and reliance. Resilient children had less violence exposure, fewer fears and worries, and mothers with better mental health and parenting skills. Their research suggested that parent functioning (e.g., mental health and parenting skills) largely influenced child adjustment.

Genes

Research suggests that genetic factors also moderate the outcomes of childhood maltreatment. Although an in depth discussion of this area is beyond the scope of this review, two of the most studied gene x trauma interactions involve the monoamine oxidase A (MAO-A) gene and the serotonin transporter gene (5-HTTLPR). In fact, the research on the MAO-A gene's link with aggression has resulted in it being nicknamed the "warrior gene" (McDermott, Tingley, Cowden, Frazzetto, & Johnsone, 2009). Kim-Cohen et al. (2006) conducted a meta-analysis of available studies that examined the link between adverse childhood experiences and varying levels of MAO-A gene in children. They found that individuals who had low MAO-A genotypes and were exposed to trauma were at higher risk of developing antisocial behaviors compared to individuals with high MAO-A genotypes. Similarly, a longitudinal study followed a large sample of male children from birth to their late 20s found that low monoamine oxidase A (MAO-A) gene moderated the relationship between childhood maltreatment and subsequent antisocial

behaviors, with males with low MAO-A being more likely than their high MAO-A counterparts to exhibit antisocial behaviors (Caspi et al., 2002). Research also suggests that the serotonin transporter gene (5-HTTLPR) may moderate the risk for depressive symptoms after childhood maltreatment or multiple stressful life events (Caspi et al., 2003). In short, this suggests that some children may be more resilient to depressive or aggressive responses following a PTE.

Summary of Risk and Resilience

In order to better understand maladaptation after PTE exposure it is important to explore what current literature has found regarding what helps predict risk and resilience. The impact of exposure during childhood, co-morbid mental health concerns, past PTE, quality of the parent-child relationship and genetic factors were explored in relation to the maladaptive functioning following PTE exposure. Although this literature review separated out these risk factors for the sake of clarity, in keeping with the DST framework for understanding human development and traumatic response, it is important to note these factors interact together and often moderate one another. Thus, the impact of one factor cannot be completely separated and must be viewed in context with other environmental, biological, and social factors. Although there are biological factors beyond the control of the individual (e.g., genetic factors), there is strong research to suggest the quality of the parent-child relationship plays and important role in moderating the effects of trauma and placing children on adaptive pathways following PTE.

Outcomes

The experience of PTE during childhood is a factor that appears to put individuals at considerable risk for long-term negative outcomes some of which include: disturbances in executive functioning (Polak, Witteveen, Reitsma & Olff, 2012), impairments in IQ and academic performance (Samuelson, Kruger, Burnett, Wilson, 2010; Delaney-Black et al., 2002), development of psychotic symptoms (Arseneault et al., 2011; Schreier et al., 2009), impairments stress and coping (Majer, Nater, Lin, Capuron, & Reeves, 2010; Schore, 2001; Teicher, Anderson, & Polcari, 2012), and psychological distress and psychopathology (Fergusson, Boden, & Horwood, 2008; Wright, Crawford, and Del Castillo, 2009).

Aberrant Brain Development

Exposure to traumatic states in infancy also can alter the child's long-term ability to manage stress both affectively and behaviorally because it occurs at a critical period of growth for the limbic system (Schore, 2001). Said differently, disturbances in typical development (e.g., exposure to traumatic event) during infancy may influence the way the neural pathways form and develop in the limbic system, which is largely responsible for affective response and motivation. Because rapid development and change is occurring in stress related systems, the impact of trauma during this period is particularly detrimental (Belsky & de Hann, 2011). Trauma during early development can profoundly alter development of the central nervous system (CNS), imparting either risk or resilience to later psychopathology (Roth, David Sweatt, 2011).

Deficits in the hippocampal region of the brain after childhood abuse and neglect have been noted (Majer, Nater, Lin, Capuron, & Reeves, 2010; Teicher, Anderson, & Polcari, 2012). Teicher et al. (2012) pointed out that a key limbic system stress modulator, corticotropin-releasing hormone (CRH), may play a role in early stress vulnerability. The release of large amounts of CRH in the developing brain may cause delayed effects on cell and dendritic branching in the hippocampal region. In other words, this may result in delayed, and perhaps, even aberrant development of neural networks that process stress. Notably, they found evidence for an association between childhood maltreatment and reduction of the volume of the subiculum (a region of the hippocampus), which plays a central role in regulating dopaminergic responses to context-dependent (e.g., conditioned fear) regulation. This suggests that strength conditioned fear regulation may be different for young children with PTE exposure compared to their non-PTE exposed counterparts.

Developmental brain differences have also been noted in prefrontal cortical dysfunction (implicated in decision making abilities) in childhood PTSD (De Bellis et al., 2002). Subsequently this may also alter how the child processes stressful situations. Children who are already at genetic risk and who do not experience reparative experiences after trauma or continue to experience trauma are at particularly high risk for developing severe psychopathologies (Schore, 2001). Thus, the impact of trauma in early childhood may occur during critical periods of brain development and result in lasting negative consequences.

Although information on brain development provides an interesting look at the possible impact of PTE exposure, several important considerations must be made when

examining this research. Although these brain abnormalities (i.e., structural and functional differences in the brain) provide interesting data to consider, the brain-behavior link is not well understood. Said differently, it is problematic to link brain changes retroactively with behavioral changes without a measure of baseline prior to the PTE. Additionally, it is important to be mindful of the different methods researchers use when measuring structural and functional brain changes. Unfortunately the method of separating regions of the brain, measuring total brain volume, and method in which researchers parcel out white and gray matter is not uniform across studies (Amaral et al., 2008, Scott & Thacker, 2005). Thus, it may be confounding results or result in seemingly conflicting findings. A uniform way of measuring implicated regions of the brain in research is needed to help appreciably compare findings.

Deficits in Performance

Given that childhood trauma is postulated to cause disturbances in the way the brain functions and develops, it is not surprising that deficits in performance measures and IQ have been noted. Samuelson and colleagues (2010) found that children who experienced a PTE and met a partial or full PTSD diagnosis had significant deficits in their verbal memory. Children with PTSD symptoms performed worse on word learning tasks in comparison to their same aged, socio-demographically matched peers without PTSD symptoms. More specifically, deficits in the effectiveness of learning and increased sensitivity to interference were noted. In other words, children with PTSD had difficulty tuning out external stimuli and retaining information on verbal memory word learning tasks. Delaney-Black et al. (2002) found that after controlling for caregiver's

IQ, home environment, socioeconomic status (SES), and prenatal exposure to substance use, that violence exposure was found to significantly impact the child's IQ scores and reading ability. Children that scored high (i.e., 90th percentile) on community violence measures and trauma-related distress had a difference of 7.5 IQ points (represents approximately half a standard deviation) compared to individuals who were low on both measures (i.e., 1st percentile). Using the same percentile comparisons (i.e., 90th to 1st), participants that scored high on community violence measures and trauma-related distress scored approximately one standard deviation lower on tests of early reading ability. In fact, exposure to violence and traumatic stress symptoms additively contributed to an estimated 10% reduction in urban first graders' overall IQ and reading abilities (Delaney-Black et al., 2002).

Pears, Kim, and Fisher (2008) conducted a study on cognitive and psychosocial functioning of 117 preschool aged foster children. They pointed out that up to 90% of child welfare system cases involve multiple types of maltreatment. However, they argued studies have rarely incorporated multiple dimensions of maltreatment and thus may be missing vital understanding in the PTE response. Their study used latent profile analysis to identify subgroups of children who had experienced maltreatment. When profile membership was examined with respect to the children's cognitive functioning they found lower cognitive functioning was related to profiles with neglect or physical abuse (or both). This suggests that different forms of childhood maltreatment may impact cognitive functioning.

Psychotic Symptoms

PTE exposure has been linked to increased risk for the development of psychotic symptoms (Arseneault et al., 2011; Schreier et al., 2009). Arseneault and Colleagues (2011) constructed their sample from the Environmental Risk Longitudinal Study database that consisted of 1,116 families with same-sex 5 year old twins. These twins (55% monozygotic and 45% dizygotic) were assessed at ages 7, 10, and 12 years for psychotic symptoms including multiple items that evaluated delusions and hallucinations. Clinicians interviewing the child had no prior knowledge of the child. Additionally, a psychiatrist who specialized in schizophrenia reviewed the accuracy of the codes in the clinicians' narrative reports. All types of trauma (i.e., accidents, bullying, and maltreatment) were significantly related to higher risk of psychotic symptoms by age 12. This risk was most pronounced in children who had experienced trauma that was associated with intent to harm (i.e., maltreatment and bullying). Psychotic symptomatology at age 12 was significantly related to socioeconomic deprivation, lower IQ, early symptoms of psychopathy, and genetic vulnerability. When these additional variables (e.g., genetic vulnerability) were controlled for, exposure to trauma was still a significant predictor of later psychotic symptoms. When type of trauma was examined closer, maltreatment by an adult before the age of seven had the highest relative risk of developing psychotic symptoms (3.48 greater) whereas accidents between the age of 7 and 12 had the lowest relative risk (1.35 greater). Children who are exposed to PTEs at a young age in comparison to those who experience PTEs in middle-childhood have poorer outcomes related to psychotic symptoms (Arseneault et al., 2011). However, PTE exposure levels were more predictive of later psychotic symptoms than age of exposure

in children. This finding is also collaborated by another non-clinical cohort of 12 year olds (n = 6437 m = 12.9) that found cumulative/severe trauma was strongly related to psychotic symptoms in early adolescence (Schreier et al., 2009). These findings underscore the importance of addressing trauma symptoms in children, particularly those that go on to experience repeated traumas.

Psychological Distress

In addition to psychotic symptoms, psychological distress and later psychopathology has also been linked to childhood PTE exposure (Fergusson, Boden, & Horwood, 2008; Wright, Crawford, and Del Castillo, 2009). Fergusson, Boden, and Horwood (2008) found that exposure to childhood sexual abuse and physical abuse was associated with increased risks of later mental disorders including depression, anxiety disorder, conduct/anti-social personality disorder, substance dependence, suicidal ideation, and suicide attempts at ages 16-25. As previously mentioned in the protective factors section, social, family, and individual factors helped mediate the effect of psychopathology for children exposed to childhood physical abuse, but not for children exposed to childhood sexual abuse.

Childhood emotional abuse and neglect has also been suggested to impact psychological distress and maladaptive attachment in adulthood. Wright, Crawford, and Del Castillo (2009) tested their theoretical model that exposure to emotional abuse and emotional neglect in childhood may threaten the security of attachment relationships and result in maladaptive models of self and self-in-relation to others. The purpose of their study was to explore the extent childhood emotional abuse and emotional neglect by

caregivers uniquely contributed to symptoms of anxiety, depression, and dissociation in young adults. Their sample was composed of 301 participants (52% female) that assessed perceptions of experiences of childhood abuse and neglect, exposure to parental alcoholism, current symptoms of psychological distress, and endorsement of maladaptive interpersonal schemas. After controlling for gender, income, parental alcoholism, and other child abuse experiences hierarchical regression analyses revealed perception of childhood emotional abuse and emotional neglect each continued to significantly influence later symptoms of psychopathology. More specifically, both emotional abuse and emotional neglect were associated with later symptoms of anxiety and depression. However, only emotional neglect was related to later symptoms of dissociation.

Incarceration

Unfortunately, but perhaps unsurprisingly, children with PTE histories are overrepresented in the juvenile justice system. Stewart, Livingston, Dennison (2008) reported that, "The links between child maltreatment and juvenile offending are well established" (p. 51). PTE exposure rates in juvenile justice systems range from 61% to 90% of incarcerated adolescents (Abram et al., 2004; Ford, Hartman, Hawke, and Chapman, 2008). Generally, PTSD prevalence estimates among juvenile justice populations are four to eight times higher than those reported by studies with community samples of similar-age peers (Saigh, Yasik, Sack, & Koplewicz, 1999; Saltzman, Pynoos, Layne, Steinberg, & Aisenberg, 2001). Additionally, Ford, Hawke, and Chapman (2010) examined youth across juvenile justice settings and found 35% had a history of complex

trauma, which was operationalized as emotional abuse and family violence (15%) or a combination of sexual or physical abuse and family violence (20%).

Despite the high number of incarcerated individuals with PTE exposure, the majority of maltreated children do not end up incarcerated (Stewart, Livingston, Dennison, 2008). Stewart, Livingston, and Dennison (2008) examined the impact timing and chronicity of child maltreatment had on juvenile offending. They found child maltreatment peaked around the transition from preschool to elementary school and then again at the transition from elementary school to high school. Additionally, their results indicated children whose maltreatment trajectory started or extended into adolescence were more likely to offend as juveniles than children whose maltreatment occurred prior to, but not during, adolescence. This suggests children with ongoing child maltreatment that extends into adolescence and maltreatment that begins in adolescents may be at particular risk for subsequent juvenile offending

It should be noted when viewing research on incarceration and PTE exposure it should not be interpreted that PTE exposure is strongly related to incarceration, but rather there is a disproportionate number of individuals with PTE exposure who are incarcerated. This distinction, although subtle, is important to recognize. It suggests a subset of individuals respond by following a maladaptive aggressive pathway that may lead them towards eventual incarnation.

Economic burden

Childhood maltreatment not only has psychological costs for the individuals who experience it, but also carries a heavy economic cost. For example, Ford, Chapman,

Connor, and Cruise (2012) aptly note that placing children in the justice system not only has considerable social/emotional and educational consequences for the individual child but also has considerable social/emotional and economic costs for society. However, the economic burden extends well beyond the cost of incarceration.

Fang, Brown, Florence, and Mercy (2012) attempted to quantify average lifetime costs per child maltreatment victim and aggregate lifetime costs for all new child maltreatment cases incurred in 2008. There results indicated that the estimated average lifetime cost in 2010 per victim of nonfatal child maltreatment is $210,012, including $32,648 in childhood health care costs; $10,530 in adult medical costs; $144,360 in productivity losses; $7,728 in child welfare costs; $6,747 in criminal justice costs; and $7,999 in special education costs. The estimated average lifetime cost per death due to child maltreatment is $1,272,900, including $14,100 in medical costs and $1,258,800 in productivity losses. Using this estimation, they calculated that the total lifetime economic burden resulting from new cases of fatal and nonfatal child maltreatment in the United States in 2008 alone was approximately $124 billion. This suggests that child maltreatment creates a substantial economic burden.

Summary of Outcomes

It is clear from reviewing the potential outcomes of PTE exposure to the individual (e.g., aberrant brain development, performance deficits, development of psychotic symptoms and emotional distress) and society that the area of childhood trauma warrants serious attention in research. This underscores the importance of identifying children who may be in need of services in order to provide early intervention.

The rest of the review will focus on a particularly high risk and understudied group, preschool children with PTE exposure. More specifically it will focus on the strengths and weaknesses of current measures, measurement and diagnostic concerns related to assessment of preschoolers, and trauma symptoms in preschool aged children. Although, as noted in the literature review, there are many potential responses to trauma (e.g., resilience, depressive symptoms, anti-social responses), this review will focus in on the measurement and assessment in preschoolers, with special attention to the area of PTSD.

Current Measures for Preschool Aged Children

Despite the high prevalence of childhood trauma exposure there are very few valid, cost effective, efficient instruments for assessing trauma in children. This problem is particularly evident in preschool aged assessment measures. Current measures that are used for assessment of traumatic symptoms in very young children include: Child Behavior Checklist (CBCL), Pediatric Emotional Distress Scale (PEDS), Trauma Symptom Checklist for Young Children (TSCYC), Traumatic Events Screening Inventory (TESI), Diagnostic Infant Preschool Assessment (DIPA), Preschool Age Psychiatric Assessment (PAPA), PTSD Semi-Structured Interview and Observational Record for Infants and Young Children (PTSD-SSI-ORIYC), and Young Child PTSD Screen (YCPS). It is important to note that these measures address different aims in the assessment of trauma from history of exposure (TESI), symptoms (CBCL, TSCYC), diagnosis (DIPA, PAPA), to screening (YCPS). An overview of each measures psychometric properties, length, and age range is provided in table 1.

Table 1. Summary of Measures of Trauma for Preschool-Aged Children

Measure	Age Range	Length	Psychometric properties
Child Behavior Checklist (CBCL 1.5-5) PTSD subscale (Achenbach & Rescorla, 2000, 2001)	1.5-5	100 items with 15 item PTSD Subscale	PTSD Scale (Dehon & Schreering, 2006) • Reliability ICC: α = .80-.83 for 2-3 years olds • Validity- Cut off 9 (Sensitivity = 75%; Specificity 84%). Convergent validity with PTSD-SSI-ORIYC (r = .66)
Pediatric Emotional Distress Scale (PEDS; Saylor, Swenson, Reynolds, Taylor, 1999)	2-10	21 items	• Reliability ICC: α = .85 for 2-3 years olds • Validity- Cut off based on maternal education level (overall correct classification of 79.7%)
Trauma Symptom Checklist for Young Children (TSCYC; Briere, 2001, 2005)	3-12	90 items	• Eight scales are 1) PTSD - Intrusion; 2) PTSD -Avoidance, 3) PTSD - Arousal, 4) Sexual concerns, 5) Dissociation, 6) Anxiety, 7) Depression, and 8)Anger/Aggression. Also includes PTSD composite score. • Reliability ICC: α = .55-.93 • Validity: Convergent with Trauma symptom checklist for children for anxiety, depression, & anger (*r* = .18-30); Convergent validity with CBCL, Child Sexual Abuse Inventory, and Child Dissociation Index (*r* = .55-82)
Traumatic Events Screening Inventory Parent Report Revised (TESI-PR-R; Ippen et al., 2002)	0-6	24 questions	None available for TESI-PR-R
Diagnostic Infant Preschool Assessment (DIPA; Scheeringa & Haslett, 2010)	2-5	517 questions	• PTSD diagnosis based off of the DSM-IV criteria • Reliability ICC PTSD without impairment: α = .87; kappa = .37-.67 • Validity: Convergent with CBCL PTSD scale (continuous r = .15-.24; categorical r = .48)
Preschool Age Psychiatric Assessment (PAPA; Egger, et al. 2006)	1-6	Varies by number of modules administered	• PTSD diagnosis based off of the DSM-IV criteria • Reliability: PTSD ICC α = .56; Kappa = .73
PTSD Semi-Structured Interview and Observational Record for	0-6	37 items	• Reliability PTSD-AA diagnosis kappa = .74-.79 (mean =.75);

Infants and Young Children (PTSD-SSI-ORIYC; Scheeringa & Zeanah, 1994)			PTSD-AA items range from kappa = .29 - 1; symptom scales ranged from kappa = .81 - 1 • Only 12% of symptoms detected through observation component • Validity 50% of children diagnosed using measure still qualified for PTSD using the diagnostic interview schedule for children (DISC-IV)
Young Child PTSD Screen (YCPS; no published study to date; developed by Scheeringa)	3-6	6 items	• Reliability: not available • Cut off 2: Sensitivity = 100%; Specificity 42.9%

Note. PTSD stands for posttraumatic stress disorder. PTSD-AA stands for posttraumatic stress disorder alternative algorithm. ICC stands for Intraclass Correlation Coefficient

Child Behavior Checklist (CBCL)

General description. The CBCL 1.5-5 is 100-item scale (Achenbach & Rescorla, 2000), which was developed to assess behavior problems in young children. This measure includes a 15-item PTSD subscale suggested by Dehon and Schreering (2006) for use with preschool age children.

Scales and Scoring. Items for the PTSD subscale are rated on a 3-point scale by the primary caregiver. Scoring norms are provided based on sex and age of the child and a manual providing this information is available (Achenbach & Rescorla, 2000). Interpretation of the test requires knowledge of standardized assessment.

Normative data. The participants used in the initial validation of the Preschool PTSD subscale included 21 children from level one trauma centers (e.g., automobile collisions), 19 children exposed to domestic violence, 9 had witnessed community and/or domestic violence, 6 had repeated invasive medical procedures (spinal taps and bone marrow aspirations), and 7 additional children that were referred by word of mouth (3 sexually abused, 3 vehicle collisions, and 1 that had a dog bite).

Psychometric information. Overall psychometric information demonstrated adequate reliability and validity (see table 1). There are some concerns regarding its appropriateness for use in certain groups. The CBCL PTSD scale did not reach adequate levels of sensitivity and specificity to screen inner city young children with high trauma exposure (Loeb, Stettler, Gavila, Stein, & Chinitz, 2011), has questionable validity for identifying trauma symptoms in sexually abused children (Ruggiero & McLeer, 2000; Sim et al., 2005), and has questionable validity for screening preschool-age children witnessing domestic violence (Levendosky, A., Huth-Bocks, A., Semel, M., & Shapiro, 2002). Strengths of the measure include it is simple to administer with no formal training, has strong psychometric information, and is widely used in research and practice (Dehon & Schreering, 2006).

Pediatric Emotional Distress Scale (PEDS)

General description. The PEDS (Saylor, Swenson, Reynolds, Taylor, 1999) is a 21-item measure developed to quickly assess behaviors identified in empirical and theoretical literature as significantly elevated after trauma exposure.

Scales and scoring. The PEDS consists of three factors including anxious/withdrawn, fearful, and acting out. Additionally, a composite score is also generated. Of the 21 items only the initial 17 items are rated on a 4-point scale and are included in generating factor and composite scores. The last four questions listed on the PEDS provide additional qualitative information on the trauma. The primary caregiver fills out the measure. The overall composite score is computed by totaling scores for the first 17 items. Cut-scores are based on maternal education level.

Normative data. The initial sample consisted of 475 two to ten year old children with PTE exposure and without PTE exposure. Data were gathered from four unique demographic sample groups that included children attending a university-sponsored school in Logan, Utah, a kindergarten sample from Boston, a Hurricane Hugo sample from Charleston, and a sample of children and adolescents that were allegedly sexually abused from an undisclosed location. The authors note that although the PEDS was developed for any type of trauma, the study participants' actual trauma experiences were limited to hurricane exposure, death in the family, divorce, and sexual abuse. Additionally, the samples lacked socioeconomic and racial/ethnic diversity and was overwhelmingly middle class and Caucasian (93%).

Psychometric information. An overview of psychometric information is provided in Table 1. The three factors and the PEDS total score demonstrated good internal consistency, test-retest reliability, and inter-rater reliability. Discriminate analysis revealed ability to adequately discriminate among children with and without trauma exposure, with 78% of cases correctly classified. However, in order for the scale to reach optimal levels of discrimination maternal education was used as a blocking variable, meaning that different cut-off scores were given to children based on their mother's level of education. This cut-off method is particularly problematic for mothers who hold a high school/technical education or less because a score of >16.5 serves as the cut-off, which automatically means their children meet the cut off criteria (minimum score is 17). This suggests the measure is inappropriate to discriminate among this group. Along these lines, Spilbury and colleagues (2005) found the original factor structure did not hold for racially/ethnically diverse children exposed to interpersonal violence. They suggested a

modified two-factor model that included items on the acting out and internalizing scale. However, Spilbury and colleagues (2005) did not provide psychometric information on a potential cut score for this population (i.e., diverse children exposed to interpersonal violence); Thus, the utility of this finding in clinical practice is limited.

Trauma Symptom Checklist for Young Children (TSCYC)

General description. The TSCYC (Briere, 2001, 2005) is a 91-item checklist that was adapted from the Trauma Symptom Checklist for Children (TSCC; Briere, 1996) to assess posttraumatic stress symptoms and comorbid difficulties.

Scales and scoring. Items are rated on a 4-point scale by the primary caregiver. The are eight scales are 1) PTSD -Intrusion; 2) PTSD -Avoidance, 3) PTSD - Arousal, 4) Sexual concerns, 5) Dissociation, 6) Anxiety, 7) Depression, and 8)Anger/Aggression. A composite score is also calculated for the PTSD scales (i.e., intrusion, avoidance, and arousal). There are two validity scales that assess intentional or inadvertent misreporting by the rater of the child's functioning. The Atypical Response validity scale reflects the rater's tendency to endorse unusual or relatively high levels of trauma symptoms in the child. The Response Level validity scale estimates the rater's tendency to underreport common problems, which can result in an inaccurately positive view of the child. A manual for administration and scoring is available and graduate training is required in order to administer this test.

Normative data. The TSCYC was normed on a diverse sample (62% non-Caucasian sample) of children ages 2-12 (Mackler, 2007). Average age of participants in the multi-site analysis (Briere, 2001) was 7.1 (*SD* = 2.6) years. Types of trauma

experienced by the participants included sexual abuse, physical abuse, and domestic violence. Norms are provided based on the child's age (3-4, 5-9, and 10-12) and sex.

Psychometric information. The measure has extensive research support and is easy to administer. See Table 1 for overview of psychometric information. Gilbert (2004) found the TSCYC has excellent concurrent validity with other parent report measures including the CBCL, the Child Sexual Behavior Inventory (CSBI; Friedrich, 1998), and the Child Dissociation Checklist (CDC; Putnam, Helmers, & Trickett, 1993). More specifically, the TSCYC anxiety and depression scales were most related to the CBCL Anxiety/Depression scale, the TSCYC anger/aggression was most correlated with CBCL Aggression scale, the TSCYC dissociation scale correlated highest with the CDC, and the TSCYC Sexual Concerns scale was most related to the CSBI. Although the psychometric data for the scale are generally strong, it should be noted that the Atypical validity scale alpha was unacceptably low (*alpha* = .36) and thus should be interpreted with caution (Briere, 2001). Additional drawbacks of this measure include length (90 items) and cost ($185 per introductory kit and 285 per scoring program CD-ROM; Trauma Symptom Checklist for Young Children, 2007). There has been some evidence that a shorter 32-item form may hold promise as a screening measure (Wherry, Corson, & Hunsaker, 2013) however, replication is needed.

Traumatic Events Screening Inventory Parent Report Revised (TESI-PR-R)

General description. Traumatic Events Screening Inventory Parent Report Revised (TESI-PR-R; Ippen et al., 2002) is a brief 24-item measure that is intended to probe for a history of exposure to traumatic event. The TESI inquires about a variety of

traumatic events, including current and previous injuries, hospitalizations, domestic violence, community violence, disasters, accidents, physical, and sexual abuse.

Scales and scoring. Items are rated as yes, no, or not sure. A child report version is also available for children aged 6-18. The longer version (TESI-PR) also has respondents rate the impact of the trauma using a scale Likert scale in which 0 denotes "not at all" and 4 denotes "extremely" (Stover, Hahn, Im, & Berkowitz, 2010).

Normative data and psychometric information. Although the information on the TESI is published in academic articles and books on trauma (e.g., Nader, 2008; Mowder, Rubinson & Yasik, 2009; Stover, Hahn, Im, & Berkowitz, 2010), norms and psychometric information are not readily available. Glaringly absent are reliability measures (e.g., inter-rater, test-retest). The measure offers a parent and child version yet provides no information on the level of agreement between these sources. Although the measure is extremely face valid in assessing traumatic history, including information on norms and psychometric information would greatly strengthen the measure.

Diagnostic Infant Preschool Assessment (DIPA)

General description. The DIPA (Scheeringa & Haslett, 2010) assesses psychopathology in childhood (one to six years of age) and provides a PTSD diagnosis based off of the DSM-IV criteria. In addition to a DSM-IV algorithm for PTSD a diagnosis based on PTSD Alternative Algorithm (PTSD-AA; Research Diagnostic Criteria for Infants and Preschool Children, 2003; Scheeringa, Zeanah, Myers, & Putnam, 2003; Scheeringa, Zeanah, and Cohen, 2010) is also provided. The PTSD-AA algorithm required only one of the seven symptoms in criterion C (avoidance and numbing

symptoms) instead of three symptoms. The authors reported they constructed their PTSD questions based the work of Dehon and Scheeringa (2006). The format of the screener is a semi-structured interview administered by the clinician. The DIPA assesses a subset of the most common disorders including PTSD, Major Depressive Disorder (MDD), Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), Separation Anxiety Disorder (SAD), Generalized Anxiety Disorder (GAD), and Obsessive Compulsive Disorder (OCD.)

Scales and scoring. The measure is conducted with the primary caregiver and takes approximately 100 minutes to complete. Each symptom begins with a stem question (read verbatim). After a stem question, the interviewer uses his/her judgment on whether follow-up probes are needed. In general, follow-up probes are provided are read verbatim; however, case specific adjustments are permitted when needed (Scheeringa & Haslett, 2010). If a symptom is endorsed, caregivers are asked if their children does this behavior ‘‘more than the average child his/her age.’’ This is intended to help frame developmental differences with typically developing preschoolers. The DIPA also assesses functional impairment at the end of each disorder. In order to administer the DIPA requirements include graduate status, training, and supervision.

Normative data. Scheeringa and Haslett (2010) reported that the DIPA sample consisted largely of poor, urban, minority population. The DIPA was normed on a sample of 50 preschool children. This sample was predominantly male (68%) and was diverse (64% black, 30% white, 4% mixed, and 2% listed as other). The mean age at time of the first interview was 4.4 years of age (*SD* = .99). Specific traumas experienced by this population were not provided.

Psychometric information. An overview of psychometric information is provided in Table 1. The median Intraclass Correlation Coefficient (ICC) for all disorders was .69 and mean was .61. Kappa levels varied by impairment level (i.e., with impairment, without impairment) and PTSD algorithm (i.e., PTSD DSM-IV, PTSD-AA). Kappas for the PTSD-AA algorithm were within acceptable ranges (with impairment kappa = .56; without impairment kappa = .67); however, the kappa for the PTSD-IV without impairment was fair (kappa =.37). It is important to note the kappa for PTSD-IV with impairment could not be calculated due to sample size (n = 1). This also calls into question the findings since many of the disorders categories contain cells with one individual (e.g., GAD with impairment, OCD with impairment). Although initial results look promising, the study should be replicated with a *much* larger sample size to see if findings hold and should be noted as a major limitation of using this measure.

Preschool Age Psychiatric Assessment (PAPA)

General description. The PAPA (Egger, et al. 2006) is a parent report measure that was derived from the Child and Adolescent Psychiatric Assessment (CAPA; Angold et al., 1995) to provide a psychiatric diagnosis for preschool age children aged two to five. A module for PTSD is available. Items for the PTSD scale were developed using Scheeringa et al.'s (2001) research diagnostic criteria for preschool age children.

Scales and scoring. There are a total of 25 modules that can be given together or separately. Sample content modules include depression and conduct problems. The measure can be administered via paper or online, which the clinician can run on their tablet. The tablet version referred to as the ePAPA and is automatically scored after

results are inputted. Hand scoring instructions are also available for the paper version. If a symptom is endorsed, the clinician is required to probe the caregiver for examples. If the clinician determines that a symptom is present, the frequency, duration, and dates of onset of the symptoms are separately assessed. The PAPA also assesses level of impairment in multiple domains (e.g., in school, at home). The PAPA takes approximately 100 minutes to administer; however, the Egger, et al. (2006) believe that the ePAPA may shorten overall administration time. Individuals administering the PAPA must have at least a bachelor's degree and undergo training.

Normative data. The PAPA norm data matches that of the census data of 2000 for Durham County (the location the measure was developed). Egger and colleagues (2006) randomly selected participants who consented to participate in their initial pre-screener (administered CBCL 1.5- 5) to select an optimal number of children based on their gender, age, and race/ethnicity. The aim of this selection process was to provide an optimal number of participants in each cell (e.g., female, white, and four year old) based on demographics of surrounding area. Additionally they used a random number generator aimed at selecting 20% children who received low scores CBCL scores (i.e., t score < 55).

Psychometric information. Psychometric information for the PAPA is listed in table 1. The psychometric information provided (i.e., test-retest reliability, ICC) for the PAPA is a good first step in validating the measure; however, additional psychometric information is needed, specifically regarding measures of validity. The average ICC for all disorders (with the exception of elimination disorders) was .80 and the average kappa was .58. A notable strength of the PAPA is it used an impressive reference group that was

purposefully selected to match demographic data of the area. Although the initial psychometric data looks promising, the PAPA should be tested in additional settings to test the generalizability of the results.

PTSD Semi-Structured Interview and Observational Record for Infants and Young Children (PTSD-SSI-ORIYC)

General Description. The PTSD-SSI-ORIYC (Scheeringa & Zeanah, 1994) is a diagnostic measure for PTSD for children younger than seven. A diagnosis can be made either by the DSM-IV algorithm or by the empirically validated alternative algorithm for young children (Scheeringa, Zeanah, Myers, & Putnam, 2003). The alternative algorithm does not require criterion A(2) (the child's reaction at the time of the event) and requires only one item to meet the avoidance/numbing criterion as opposed to the DSM-IV requirement of three items. The measure includes questions not only for caregivers, but also requires clinicians to collect observational data of the child during the interview. The PTSD-SSI-ORIYC also has a section that assesses functional impairment and distress.

Scales and scoring. There are four scales including re-experiencing, avoidance, hyper-arousal, and alternate criteria. The alternate criteria scale includes questions related to loss of developmentally appropriate skills, fears, separation anxiety, and new aggressive behaviors following the trauma. There is a separate scale that also is used to measure level of impairment. The clinician first asks if the child has experienced one of the seven listed stressors (e.g., automobile accident, sexual abuse, witnessing a violence) and also gives the parent the opportunity to identify a stressor the measure may not have

listed that they believe may have been traumatic for their child. The measure collects data regarding the first occurrence, last occurrence, and the number of times the event occurred. In addition to history, symptom, and impairment measures clinical observations of the child's behavior are reported during the interview. Administration requires instrument training and graduate training. A coding manual is available to assist with classification. The measure is available at no cost and takes around 45 minutes to complete.

Normative data. The measure was initially developed with a sample of 20 children who had experienced trauma prior to the age of two. Specific traumas the norm group experienced included physical abuse, domestic violence, medical trauma, and accidents. Additional information on gender, age, and racial ethnic background of sample was not readily available in Separate norms for gender or age are not available.

Psychometric information. Psychometric data is summarized in table 1. The mean Kappa for interrater reliability for individual symptoms was .67 (Sceeringa & Zeanah, 2003). Children diagnosed with PTSD at Time 1, exhibited greater symptomatology than those not diagnosed one and two years later, providing evidence for the predictive validity of the measure. In addition, PTSD diagnosis at Time one, predicted diagnosis two years later (Scheeringa, Zeanah, Myers, & Putnam, 2005). Scheeringa, Peebles, Cook and Zehanah (2001) investigated the procedural validity of their PTSD diagnostic algorithm using the PTSD-SSI-ORIYC and found that 12% of the diagnostic criteria present in children could be detected by a clinician observation. The remainder of the PTSD criteria was only apparent through caregiver report, with the most problematic aspects of parental reporting noted in the avoidance/numbing criteria. Data

are not provided regarding test-retest validity or internal consistency. This data is needed to strengthen the measure. It should be noted that the psychometrics have only been examined by authors and have used relatively small sample sizes of children.

Young Child PTSD Screen (YCPS)

General Description. The YCPS is a six-item screen that is intended to quickly assess if a child should be followed up with for PTSD treatment following an acute trauma (i.e., 2-4 weeks after an event). This screener is also useful for settings in which a longer assessment is not available. It is not intended for a general assessment of PTSD or to make a diagnosis. The YCPS has no formally published journal article or book detailing however, information is available on the Infant Mental Health Institute's page (http://www.infantinstitute.org/MikeSPDF/YCPS_versFeb2011.pdf) and was developed by Michael Scheeringa, who is responsible for the creation of many of the instruments noted in this review. The structure of six items was based on the PTSD-AA criteria (Scheeringa et al., 2003; Scheeringa, Zeanah, and Cohen, 2010) and had the specific goal to identify youth who have at least five PTSD symptoms. This is because clinical intervention trials typically require at least five symptoms for inclusion (Cohen et al., 2004). Additionally, when young children are diagnosed with a developmentally sensitive alternative algorithm for PTSD (Scheeringa, Zeanah, Myers, & Putnam, 2003; Scheeringa, Zeanah, and Cohen, 2010), the average number of symptoms ranges from seven to 10.

Scales and scoring. Although, each item is scored on a three point Likert scale, with one representing no, two representing a little, and three representing a lot, the total

score is irrelevant. For the purpose of scoring the interviewer scores any positive endorsement (i.e., either a little or a lot) as a "yes" to the item. If two items out of the six are scored as "yes" (meaning that the child is experiencing them) then the screener is considered positive. The rationale behind this method was that parents might not report mild or moderate symptoms that their child is experiencing, which could result in a false negative screen. Training needed to administer the instrument is not provided.

Normative data. The author stated he received his data for this measure from a set of 284 three to six year old children who were used in another mental health funded study (R01 MH65884-01A1). Further information on the demographics of this sample is not presented. No gender or age norms are available.

Psychometric information. Psychometric information is provided for the cut-score of two, which is presented in Table 1. No further psychometric information is available at this time. Substantial research that evaluates the YCPS psychometric properties (i.e., both reliability and validity) is needed.

Summary of Available Measures

Although presented measures are a positive start to better assessing PTSD treatment in preschoolers some notable gaps are present. Perhaps one of the most noticeable is the lack of a well-validated brief screener for preschool children. The YCPS is a promising starting point and has its questions rooted in the well-researched PTSD-AA criteria (Research Diagnostic Criteria for Infants and Preschool Children, 2003; Scheeringa et al., 2003; Scheeringa, Zeanah, and Cohen, 2010). However, the specificity level (42.9%) is concerning, especially when considering recommendations that screening

instruments should adhere to standards of sensitivity rates of 70-80% and specificity rates around 80% (Glascoe, 2005). The psychometric information, additionally, needs to be built upon (e.g., inclusion of test-retest, ICC, and concurrent validity). Another notable gap has emerged with the updated criteria for PTSD for children six years and younger in *The Diagnostic and Statistical Manual of Mental Disorders 5th Edition* (5th ed.; *DSM–5*; American Psychiatric Association, 2013). This update has created a need for a diagnostic measure that is rooted in these new diagnostic requirements.

Diagnostic Considerations for PTSD in Preschool Children

Early childhood populations pose special diagnostic challenges particularly in the realm of Post-Traumatic Stress Disorder (PTSD). It is important to note that the former DSM-IV-TR criteria were constructed without data from children less than 15 years of age (Scheeringa, Zeanah, Cohen, 2011). In the absence of this data, the developmental appropriateness of the diagnosis was called into question, in particular the requirement of three avoiding/numbing symptoms (Scheeringa, Meyers, Putnam, &, Zeanah, 2012). Scheeringa and Colleagues (2012) suggested this might lead to the false negative diagnoses for children who may have symptomatology and impairment that could warrant a diagnosis.

In response to concern of the developmental appropriateness of the diagnosis for young children researchers began examining potential differences in adult and child responses to PTEs. A growing body of research suggested that preschool children experience a traumatic response appreciably different from that of an adolescent or adult (Pynoos et. al, 2009; Scheeringa, Wright, Hunt, & Zeanah, 2006; Scheeringa, Zeanah,

and Cohen, 2010; Scheeringa, Zeanah, Myers, & Putnam, 2003; Zeanah & Gleanson, 2010). Thus, a preschool subtype of PTSD in was proposed for the DSM-5 and was approved.

A preschool subtype of PTSD was recently approved in *The Diagnostic and Statistical Manual of Mental Disorders 5th Edition* (5th ed.; *DSM–5*; American Psychiatric Association, 2013). The preschool subtype is intended for children six years and younger and requires in Criterion A that a direct exposure to "actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways: 1) directly experiencing the traumatic event; 2) witnessing, in person, the event(s) as it occurred to others, especially primary caregivers or; 3) learning that the traumatic event(s) occurred to parent or caregiver figure (p. 272-273)." Criterion B requires the presence of one or more symptoms of intrusion following the traumatic event (e.g., recurrent, involuntary, and intrusive, distressing memories of the traumatic event, which can be manifested in play reenactment). Criterion C requires "one or more symptoms representing either persistent avoidance of stimuli associated with the traumatic event(s) or negative alterations in cognitions and mood associated with the traumatic event(s), must be present, beginning after the event(s) or worsening after the event(s) (p. 273)." An example of an avoidance of stimuli includes, an "avoidance of or effort to avoid people, conversations, or interpersonal situation that arouse recollection of the traumatic event(s) (p.273)." An example of a negative alteration in cognition for preschool age children is, "socially withdrawn behavior (p.273)." Criterion D requires that the child have alteration in their arousal and reactivity that is related to the traumatic event(s). An

example item for this criterion is, "sleep disturbance (e.g., difficulty falling or staying asleep or restless sleep; p. 273)."

Establishing developmentally appropriate criteria is an important first step to assessment of PTSD in preschoolers. However, additional considerations must be made when diagnosing young children. Carter, Briggs-Gowan and Davis's (2004) article discussed challenges in the assessment of psychopathology in children and listed four factors that complicate the task of developing age-appropriate assessment strategies. They cite the following difficulties including the: "(1) the rapid pace of developmental transitions and growth in early childhood; (2) a lack of guidelines for integrating data that are gathered from different sources and methods; (3) limited information for determining levels of impairment both within the child and within the family system; and (4) difficulty assessing child functioning within the relevant relational and cultural contexts." Said differently, when assessing young children consideration must be given to developmental appropriateness of observed behaviors (e.g., temper tantrum severity and frequency in a toddler versus an adolescent), affective states, and cognitive functioning. Information must be effectively integrated from multiple sources and level of impairment within the child and the child's environment (e.g., family) needs to be considered. Finally, consideration must be given to culture's impact on diagnosis. In summary, assessment of psychopathology in children is a large task with *many* considerations.

Measurement Concerns with Assessing PTSD in Preschool Children

In addition to considerations in diagnosis of PTSD in preschoolers, discussion must also be given to potential measurement concerns regarding gathering information

about psychopathology in very young children. A large concern in measurement of PTSD in preschool children is the heavy reliance on caregiver self-report. Modrowski, Miller, Howell, and Graham-Bermann (2013) conducted a study of 55 mother-child dyads (mean of age child = 5; *SD* = .93) from diverse backgrounds (45% Caucasian, 24% African American, 24% multiracial, and 7% Latino) aimed at addressing this concern. Each of the children in the study witnessed intimate partner violence. The PTSD-SSI-ORIYC (Scheeringa & Zeanah, 1994) was used to gather reports of PTSD symptoms from both the mother and therapist. The results were compared in terms of the symptom subtypes that the child expressed at home and in therapy. Therapists reported PTSD symptoms for each child across 10 group therapy sessions that occurred over a five-week period. Mothers reported at the preintervention interview that their child experienced an average of 3.69 (*SD* = 3.01) reexperiencing symptoms, 2.06 (*SD* = 2.05) avoidance symptoms, and 3.73 (*SD* = 2.64) physiological arousal symptoms in the past month. Therapists reported an average of 1.99 (*SD* = 1.1) reexperiencing symptoms, 1.67 (*SD* = 1.36) avoidance symptoms, and 0.76 (*SD* = .92) physiological arousal symptoms.

It should be noted differences between mothers and therapists were not statistically significant for reexperencing or avoidance symptoms; however, there was a significant difference in arousal symptoms, with mothers reporting significantly more arousal symptoms than therapists. Reasons for the significant difference in arousal symptoms are unclear. It could be that the children present differently in different settings (e.g., home and group therapy) or the mothers witnessed behaviors the clinicians did not have the opportunity to observe yet. Alternatively it could be that the mothers are especially focused on these behaviors or may be over-reporting the arousal symptoms.

The consistency of clinician and mother reports for reexperencing or avoidance symptoms is promising as it suggests there is significant agreement for these areas when assessing preschools that have witnessed intimate partner violence. Additionally, only 12% of symptoms were directly observable by clinicians, suggesting caregiver self-report is crucial into understanding traumatic stress response in very young children.

Although concordance rates between caregivers and preschool age children cannot be conducted due to the young age of the child, studies have examined school aged child self-reports and the reports provided by their caregivers. Stover, Hahn, Berkowitz, and Im's (2010) study evaluated the concordance between caregiver and child on the child's trauma history and the child's presence of posttraumatic stress disorder (PTSD) symptoms. Their study consisted of 76 children (57.89% female) between the ages of 7 and 17 years of age and their caregivers (89% mothers). The sample was diverse with 31.6% Caucasian, 36.8% African American, 19.7% Hispanic, and 11.8% multi-ethnic or other. The children were referred for the following traumatic events: 21.1% sexual abuse; 19.7% assault; 23.7% motor vehicle accident; 21.1% witnessing violence; 5.3% threatening; 5.3% injury; and 2.6% animal bite. They found that Cohen's kappa ranged from .12 to .58. Findings of this study suggest that agreement between child and caregiver varies by PTE and correlations were considered moderate at best. Additionally, and importantly, the study found that parents had a tendency to underestimate their child's exposure and reported symptoms after trauma (this was particularly true for females and adolescents). This signals problems not only from a measurement perspective, but also importantly from a treatment seeking perceptive. Because parents may underestimate the impact the trauma has had on their child they

may not seek needed treatment. While this literature brings up important concerns the study must be replicated and findings may not directly apply to preschool age children.

Trauma Symptoms in Young Children

Research suggests that trauma symptoms in children may be different than symptoms noted in adults. Children exhibit impairments in the areas of attachment (Zeanah, Scheering, Boris, Hellers, Smyke, & Trapani, 2004), externalizing and internalizing behaviors (Pears, Kim, and Fisher, 2008), and manifestations of traumatic stress response that differs from adults (Modrowski., Miller, Howell, & Graham-Bermann, 2013) . Thus, a discussion of these differences is warranted when considering the assessment of trauma in children.

Pynoos et al. (2009) noted young children may respond to trauma by reducing exploration of their environment, constraining their play, and may increase physical or emotional proximity to their caregiver. Modrowski., Miller, Howell, and Graham-Bermann (2013) found the most commonly endorsed symptom by clinicians conducting group therapy for preschools (mean age = 5; *SD* = .93) exposed to intimate partner violence was "reenacted the traumatic event in play or drawing" (67%), "talked about feelings associated with the family violence" (62%), and "seemed more withdrawn or less sociable than other kids" (53%). Mothers of the children reported that the most common symptoms were "irritability, fussiness, mood swings, or temper tantrums" (67%), "appearing upset when separating from the mother" (66%), "acting aggressively" (66%), and "talking about their feelings associated with family violence" (58%).

Research has also shown attachment is also negatively impacted by child maltreatment (Zeanah, Scheering, Boris, Hellers, Smyke, & Trapani, 2004). More alarmingly was the vast majority of a sample of 94 maltreated toddlers met diagnostic criteria for an attachment disorder. The most common form was indiscriminate/disinhibited Reactive Attachment Disorder (RAD), with approximately 40% of the sample meeting criteria. In other words the child is more likely to inappropriately engage with and approach adults and strangers. For example, common behaviors of children with this indiscriminate/disinhibited RAD include willingly wandering off with strangers, or initiating physical contact with unfamiliar adults (Scott Heller, Boris, Fuselier, Page, Koren-Karie, & Miron, 2006).

Most research studies lump child maltreatment types together or study them entirely separately from other forms. However, this approach may result in a loss of information on how different PTEs uniquely affect the child's affective, cognitive, and emotional state. Research in this area is remarkably sparse, particularly for young children. However, Pears, Kim, and Fisher (2008) found externalizing was highest in preschools with sexual abuse, physical abuse, emotional maltreatment, and neglect profiles. Internalizing symptoms were highest in the profiles with physical or sexual abuse (or both). This suggests different forms of trauma may result in different elevations in internalizing and externalizing symptoms. However, more research is needed in this area to confirm that appreciable differences are consistently found when comparing across PTE type.

A Delphi study was conducted with an array of mental professionals (e.g., social workers, academics, medical doctors, psychologists) to develop a consensus opinion on

possible early indicators of child abuse and neglect (Powell, 2003). Of the initial 73 items generated by the expert panel 46 reached a census of agreement. The behavioral and developmental items that had levels of agreement of 90% or more included "the child self-harms"; "the child displays inappropriate sexualized behavior"; "the child has undue fear of adults"; "the child runs away"; "the child forages/hoards food"; "the child is cruel to animals" and; "there are sudden changes in the behavior/progress of the child." However, it should be noted that although this study provides valuable opinions from various experts across multiple fields, the definition of a "child" was not clearly operationalized. It is possible that they conceptualized this list using children up to the age of 18. Thus, some of the symptoms generated may not be appropriate for very young children.

Ethical and Legal Considerations

Mandated Reporting

Most of the laws surrounding mandated reporting were generated in the 1960s after the publication of Kempe, Silverman, Steele, Droegemueller, and Silver (1962) groundbreaking article on "battered child syndrome" that was published in the *Journal of the American Medical Association* (Rodriguez-Srednicki & Twaite, 2004). This article helped bring the issue of child maltreatment into public awareness resulting in policies requiring physicians to report suspected child maltreatment; in fact, by 1967 every state had mandated reporting requirements regarding physical abuse for physicians (Rodriguez-Srednicki & Twaite, 2004). According to the US Department of Health and Human Services (2012) report on "Mandatory Reporters of Child Abuse and Neglect" 48

states designate professionals who are required by law to report child maltreatment. These individuals typically have frequent contact with children and often include social workers, nurses, school personnel, health care workers, mental health professionals, child care providers, medical examiners, and law enforcement officers (US Department of Health and Human Services, Mandatory Reporters of Child Abuse and Neglect, 2012). In 1974 CAPTA was introduced into law and addressed minimum standards for child abuse and neglect; the act was then reauthorized in 2010. It is important to note, however, that there is variation among states regarding more specifics in the definitions of various forms of child maltreatment.

With the variations across states regarding what constitutes child maltreatment it is not surprising confusion often arises surrounding mandated reporting. There are common standards for making a report of child maltreatment, which are applied in most states including that "a report must be made when the reporter, in his or her official capacity, *suspects* or *has reasons to believe* that a child has been abused or neglected. Another standard frequently used is in situations in which the reporter has knowledge of, or observes a child being subjected to, conditions that would reasonably result in harm to the child" (US Department of Health and Human Services, Mandatory Reporters of Child Abuse and Neglect, 2012, p. 3). Complete information on specific state statues regarding individuals who are required to report, standards for making a report, requirements surrounding privileged communication, and requirement involving including reporters name in the report can be found on the childwelfare.gov website (https://www.childwelfare.gov/systemwide/laws_policies/statutes/manda.pdf).

Ethical Standards

The American Psychological Association (APA, 2010) also has ethical standards that mandate reporting of child maltreatment. Thus, when conducting a study with children the informed research consent must provide legal guardians with an explanation of the limits of confidentiality. Additionally, if distress is noted surrounding past PTE exposure the researchers should, at minimum, provide a list of local referral services that address trauma care in young children.

Ethical Considerations with Ethnic Minority Youth

Special ethical consideration should be given when working with children from ethnic minority backgrounds. The American Psychological Association, the National Institute of Mental Health, and the Fordham University Center for Ethics Education gathered a group of national leaders in bioethics, multicultural research, and ethnic minority mental health to formulate a document to guide ethical decision making for mental health research involving ethnic minority children and youths (Fisher et al., 2002). Some notable recommendations included: 1) justification of the scientific merit and the assessment of research risks and benefits to persons or groups that are being studied; 2) critical evaluation of the language used in their informed consent (e.g., account for different levels of language proficiency and/or preferences); 3) consideration of the impact of cultural conceptions of adult authority and individual autonomy when obtaining guardian permission (e.g., legal guardians' may request different levels of adult and community involvement before consent is give); 4) valuing the importance of community and participant perspectives (e.g., the ongoing reciprocal and respectful

dialog between researchers and community members); and 5) the consideration of cultural equivalence of assessment measures. Taken together, when conducting research with children, considerations must be given to consent, confidentiality, and disclosure processes.

Conclusion and Summary

Summary

The dissertation proposal was conducted with the purpose of identifying a need in the field of early childhood trauma and focused on five major categories of child maltreatment including: 1) neglect; 2) physical abuse; 3) sexual abuse; 4) emotional abuse; and 5) witnessing intimate partner violence. More specifically, the purpose of the review was to explore current measures that assess PTE exposure. In order to establish relevance for measuring PTE response in children the first half of the review primarily focused on risk factors, protective factors, and outcomes associated with PTE exposure. The impact of exposure during childhood, co-morbid mental health concerns, past PTE exposure, quality of the parent-child relationship and genetic factors were explored in relation to the maladaptive functioning following PTE exposure. DST was used as a theoretical framework to conceptualize the interactions and moderating effect among these relationships (i.e., risk factor, protective factors, and outcomes).

The review highlighted that childhood PTE exposure ranges from approximately 65 to 80% (CDC, 2010a; Finkelhor, Ormrod, & Turner, 2009). Notable risk was established for very young children, who account for a large portion (i.e., over 50%) of CPS referrals. Although the potential for experiencing a childhood PTE is high, the

outcome of this exposure does not always end in lasting adverse consequences. In fact, the response to PTE is rather heterogeneous and most individuals follow a resilient pathway (Bonanno, 2004; Bonanno & Mancini, 2012). Despite the high number of resilient individuals, children are at elevated risk for poorer outcomes following traumatic event exposure. These risks included aberrant brain development, deficits in performance and IQ, psychotic symptoms, psychological distress, incarceration, and elevated economic burden.

Despite the high prevalence of childhood PTE exposure and negative outcomes associated with exposure, there are very few valid, cost effective, efficient instruments for assessing PTE exposure in young children. The review covered measures that assessed history of exposure (TESI), symptoms (CBCL, TSCYC), diagnosis (DIPA, PAPA), and screening (YCPS). An overview of each measure's psychometric properties, normative data, length, age range, and strengths and limitations was provided. Although presented measures are a positive start to better assessing PTSD treatment in preschoolers some notable gaps were found.

Gaps in Literature

The area of preschool PTE assessment (history, screening, symptom inventory, diagnostic measures) could benefit from additional research; however, the area of first line screeners is particularly weak. First line screeners fulfill an important need in that they quickly identify children in need of further evaluation and possible treatment services. In fact, some have recommended a multi-stage screening process, which includes first line screeners, as a way to efficiently assess children for developmental

problems and mental health concerns (e.g., Carter, Briggs-Gowan & Davis, 2004; Loeber, 1990). These instruments are fast, inexpensive, easy to administer, and are needed to aid in early detection. If a positive screen is noted then more intensive testing could be recommended to help clarify the nature of the problem.

Although the YCPS has notable strengths (e.g., design is rooted in empirical research), psychometric information is limited and specificity levels are currently unacceptable for a first line screener. Another notable gap has emerged with the updated criteria for PTSD for children six years and younger in *The Diagnostic and Statistical Manual of Mental Disorders 5th Edition* (5th ed.; *DSM–5*; American Psychiatric Association, 2013). This update has created a need for a diagnostic measure that is anchored in the new DSM-V criteria. Each of these measurement areas presents an opportunity to uniquely and importantly contribute to the field of pediatric trauma.

Chapter III: Methods

Participants

Marquette's Institutional Review Board (IRB) approved this study prior to implementation. The primary caregiver signed an IRB-approved informed consent form (see Appendix A) prior to participation in this study. Participants at the primary research site, the Penfield Children's Center, were invited to participate in the study. Participants included children aged one to six years old. Exclusionary criteria included a prior diagnosis of Autism Spectrum Disorders or severe intellectual disabilities. Convenience sampling methods was used to gather the sample. Given the current demographics of the Penfield Children's Center, it is expected that the sample will be comprised mostly of low-income families.

The number of participants needed for the study was in the 150 to 250 range. Sample size requirements for concurrent validity were calculated using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). Because the ECTSS is thought to be theoretically similar to the TSCYC and the PEDS, a directional hypothesis (i.e., one tailed) was selected. The alpha for the proposed analysis was set at .05, power was set at .95, and correlation for the null hypothesis was set at 0. Given these parameters, sample size requirements to detect correlations ranging from .3 (moderate) to .8 (high) ranged from approximately 30 participants to 115 participants, with higher correlations requiring fewer subjects. Thus, in order to be conservative it is recommended that 115 participants receive these additional measures (i.e., TSCYC and PEDS) to establish concurrent validity for the measure.

Because the Exploratory Factor Analysis (EFA) requires the largest sample to run the proposed analyses, adequate sample size will ultimately be determined by EFA requirements. Adequate sample size for the primary analysis, the Exploratory Factor Analysis (EFA), is a complex issue with many considerations. Schmitt (2011) pointed out that when considering sample size it is important to keep in mind that factors such as size of the hypothesized model, distribution of variables (e.g., degree of multivariate normality), estimation method (e.g., maximum likelihood), and the strength of association between items and factors all influence precision and power, which ultimately affect the optimal sample size. Worthington and Whittaker (2006) also detailed issues related to EFA sample size and provided four overarching guidelines to help researchers determine sample size. These guidelines included: "(a) sample sizes of at least 300 are generally sufficient in most cases, (b) sample sizes of 150 to 200 are likely to be adequate with data sets containing communalities higher than .50 or with 10:1 items per factor with factor loading at approximately .4 (c) smaller samples sizes may be adequate if all communalities are .60 or greater or with at least 4:1 items per factor and factor loading greater than .6, and (d) sample sizes of less than 100 or with fewer than 3:1 participants to item ratios are generally inadequate (Worthington & Whittaker, 2006, p. 817)." Thus, if any of the above guidelines are met the sample size will be deemed adequate for the purpose of this study. Thus, a sample size of around 150 to 250 participants will likely be adequate for the purpose of this study.

Creation of an Item Pool

Guidelines for creation of an initial item pool closely followed recommendations outlined by Clark and Watson (1995). These included selecting items sampled from each of the major content areas including those identified by the literature review, the National Institute of Mental Health (NIMH), and the DSM-5 that make up the more general domain of preschool posttraumatic stress response (i.e., intrusion, avoidance/negative alteration in mood, arousal) and corresponding affected areas (e.g., attachment, mood), with broader content areas having a larger number of corresponding items. In addition, items to assess overly favorable responding were also included in the measure as part of a response style scale. The initial pool will be intentionally over-inclusive to account for items that will be removed due to weak discrimination properties or poor fit within constructs presented in the scale. Items will be written in simple, non-colloquial language, and will not be "double-barreled" (i.e., items that assess more than one characteristic). Additionally, final items were written at or below 4th grade reading level. The Flesch-Kincaid Reading level for the initial measure was 3.5. Because exact phrasing can have impact on how the content is measured, variation of the wording of similar constructs (e.g., those that measure negative affect, sad, upset) was used to help minimize the effect of individual differences on response style.

Finally, the choice of format was a Likert-type rating scale. This was chosen over a dichotomous item response format (e.g., yes, no) because dichotomous formats are typically less reliable/stable and can lead to unbalanced response distributions, which can lead to distorted correlational results (Clark, Watson, 1995; Comrey, 1988). The response format was a four point frequency format Likert type scale (4 =Always/Almost

Always, 3 = Often, 2 = Sometimes, 1 = Never). Adding numerous response alternatives (e.g., 10, 12 point Likert scale) does not necessary ensure higher reliability and validity, especially when respondents are not able to make more subtle distinctions. Additionally a positive number of response alternatives were selected (e.g., 4 instead of 3) to help "force" a choice and discourage middle option responses. The frequency scale was also operationalized in the measure's instructions (e.g., Always/Almost always refers to a feeling or behavior that is occurring daily) to help make these descriptors more concrete. This initial item pool is presented in Appendix B.

Measures

The Intake Form (IF), Trauma Symptom Checklist for Young Children (TSCYC), Traumatic Events Screening Inventory Parent Report Revised (TESI-PR-R), and Pediatric Emotional Distress Scale (PEDS) were used in the study. The Intake form will be used to collect demographic information. The TESI was used to gather information on past PTE exposure. The TSCYC and PEDS were gathered for a random subsample of 115 participants to establish concurrent validity for the ECTSS.

IF

The IF was used to collect demographic information (e.g., age, gender, socioeconomic status) about the child and the family. See Appendix C for a complete list of intake questions.

TESI-PR-R;

The TESI-PR-R (Ippen et al., 2002) is a brief 24-item measure intended to probe for a history of exposure to traumatic events. The TESI inquires about a variety of traumatic events, including current and previous injuries, hospitalizations, domestic violence, community violence, disasters, accidents, physical, and sexual abuse. Items are rated as yes, no, or not sure. A sample item is, "Has someone ever directly threatened your child with serious physical harm?" Currently no psychometric information is available for this instrument.

TSCYC

The TSCYC (Briere, 2001, 2005) is a 90-item checklist adapted from the Trauma Symptom Checklist for Children (TSCC; Briere, 1996) to assess posttraumatic stress symptoms and comorbid difficulties for children ages 2-12. The TSCYC is used widely in early childhood trauma research and is well validated. Gilbert (2004) found that the TSCYC has excellent concurrent validity with other parent report measures including the CBCL, the Child Sexual Behavior Inventory (CSBI; Friedrich, 1998), and the Child Dissociation Checklist (CDC; Putnam, Helmers, & Trickett, 1993). The coefficient alpha for this measure ranges from .55-.93 for each of the eight scales (Briere, 2001; 2005). Items are rated on a 4-point scale by the primary caregiver. The eight scales are 1) PTSD -Intrusion; 2) PTSD -Avoidance, 3) PTSD - Arousal, 4) Sexual concerns, 5) Dissociation, 6) Anxiety, 7) Depression, and 8) Anger/Aggression. A composite score is also calculated for the PTSD scales (i.e., intrusion, avoidance, and arousal). For the purpose of this study, only subscales one through five (i.e., 45 items) were used. Although it

would be optimal to administer this measure to the complete sample, both time and expense did not make this a feasible option. The measure was administered to a random subsample of 115 participants.

PEDS

The PEDS (Saylor, Swenson, Reynolds, Taylor, 1999) is a 21-item measure that was developed to quickly assess behaviors identified in empirical and theoretical literature as significantly elevated after trauma exposure. The PEDS consists of three factors including anxious/withdrawn, fearful, and acting out. Additionally, a composite score is also generated. Of the 21 items, only the initial 17 items are rated on a 4-point scale and are included in generating factor and composite scores. The last four questions listed on the PEDS provide additional qualitative information on the trauma. The PEDS total score demonstrated acceptable internal consistency (.85), test-retest reliability (.56), and inter-rater reliability (.77) (Saylor, Swenson, Reynolds, Taylor, 1999). The PEDS was administered to the entire sample used in the study, as it is free for use and relatively short. This measure was used to help establish concurrent validity.

Procedures

Any child who received services from a Midwestern Birth-to-Three agency and was below the age of six was eligible to participate in the study. Participant information was gathered from the Behavior Clinic, childcare center, and parent mentors. With the exception of the intake measure, the remaining instruments were administered in random order to avoid possible order effects. Children who endorsed PTE exposure were

provided with a list of referral services including the Penfield Behavior Clinic's New Hope trauma program and Children's Hospital of Wisconsin's trauma-focused cognitive behavioral (TF-CBT) program.

Chapter IV: Results

Demographics for the 150 participants in the sample are provided in Table 2. The sample ranged in age from 1 to 6 years with an average age of around 2.5 years. The majority of the sample was male (65.3%), was racially and ethnically diverse (52% African American; 14.0% Latino/a; 22.6% Multi-Racial/Ethnic), and had a family income below the federal poverty level (89.9% below), which, for example, is $16,200 for a family of two and 24,300 for a family of four (Federal Poverty Line, 2016). Paternal and maternal education was around a high school senior. Of the sample, 81.4% reported at least one potentially traumatic event as assessed by the TESI and 42.9% reported experiencing child maltreatment. The most common types of child maltreatment in the sample were as follows: witnessing domestic violence (32.4%), witnessing domestic verbal abuse (20.3%), physical abuse (8.2%), neglect (8.1%), verbal abuse (4.1%), threatened with physical harm (3.4%), and sexual abuse (.7%).

Table 2. Sample Demographics

Variable	*M*	*SD*	%
Age	2.49	1.12	
Gender			
Males			65.3
Females			34.7
Race			
African American			52.0
Latino/a			14.0
Caucasian			10.7

Asian/Pasic Islander			.7
Multi-Racial/Ethnic			22.6
Education			
Maternal (grade)	12.53	2.09	
Paternal (grade)	11.96	2.96	
Federal Poverty Line (% below)			89.9
Trauma Exposure (Any)	2.50	2.11	
Trauma Exposure (Maltreatment Only)	.78	1.03	
No Maltreatment Exposure			57.1%
One Maltreatment Experience			16.3%
Two Maltreatment Experiences			19.7%
Three Maltreatment Experiences			5.4%
Four Maltreatment Experiences			1.4%
Maltreatment type			
Physical Abuse (% experienced)			8.2
Threatened with Physical Harm (% experienced)			3.4
Witness to Domestic Violence (% experienced)			32.4
Witness to Domestic Verbal Abuse (% experienced)			20.3
Sexual Trauma (% experienced)			.7
Verbal Abuse (% experienced)			4.1
Neglect (% experienced)			8.1

Hypothesis One: Content Validity

The content validity of the measure was examined. This was accomplished by having parents from the community rate the proposed items for clarity, share their feedback on each of the items in small group format, and then have a leader from each group share their feedback with the larger group. Excellent item clarity was defined as an item with a clear meaning, was not double-barreled, and did not use language that was colloquial to the field of psychology. The rating for clarity used the following markers: 1 = did not understand item, 2 = need more information, 3 = somewhat clear, and 4 = clear meaning. Items scores below a 2.5 on clarity were considered for removal or modification. After the parent groups were completed, these items were shown to a group of experts and rated again on clarity, and additionally rated on relevance of assessing trauma symptoms in young children. The rating for relevance used the following markers: 1 = not at all relevant, 2 = little relevance, 3 = some relevance, 4 = good relevance, 5 = excellent relevance. Items scores below a 3 on relevance and 2.5 on clarity were considered for removal or modification.

The parent report form can be found in Appendix D. Demographics of the 32 parents in the two focus groups were calculated. In the parent group, 80% was of ethnic minority status (45% African American; 15% Multi-Ethnic; 20% Latino/a) and 96% were female, who all identified as being the primary caretaker of their child. Item statistics for item clarity can be found in Table 3. Parents shared they found the initial statement "my child", which proceeding most of the questions, distracting, and this qualifier was removed. Additionally, questions 61 and 65 did not meet the parent clarity rating cut-off and were subsequently removed. After the parent meeting the researcher met with again

with a PhD English professor, with a reading specialization, to reduce the reading level and increase the clarity prior to expert review. Reading level for the measure was at a 3.4 Flesch–Kincaid Grade Level.

Table 3. Parent Rating of Clarity of ECTSS Items

Clarity Items	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
Minimum	3.00	4.00	4.00	3.00	3.00	3.00	2.00	4.00	4.00	4.00	4.00	2.00	4.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	3.30	4.00	4.00	3.13	3.14	3.40	2.43	4.00	4.00	4.00	4.00	2.74	4.00
SD	.45	.00	.00	.62	.62	.54	1.16	.00	.00	.00	.00	.65	.00
Clarity Items	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26
Minimum	4.00	4.00	4.00	4.00	2.00	5.00	3.00	4.00	4.00	4.00	3.00	4.00	4.00
Maximum	4.00	4.00	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	4.00	4.00	4.00	4.00	2.84	5.00	3.25	4.00	4.00	4.00	3.13	4.00	4.00
SD	.00	.00	.00	.00	1.11	.00	.75	.00	.00	.00	.45	.00	.00
Clarity Items	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39
Minimum	4.00	4.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	4.00	4.00	3.23	3.34	3.64	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
SD	.00	.00	.31	.32	.20	.00	.00	.00	.00	.00	.00	.00	.00
Clarity Items	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52
Minimum	4.00	4.00	4.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	4.00	4.00	4.00	4.00	3.34	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.32
SD	.00	.00	.00	.00	1.11	.00	.00	.00	.00	.00	.00	.00	.45
Clarity Items	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65

Minimum	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	1.00	3.00	4.00	4.00	1.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	3.13	3.17	4.00	4.00	4.00	4.00	4.00	4.00	1.83	3.14	4.00	4.00	1.85
SD	.42	.41	.00	.00	.00	.00	.00	.00	1.45	.62	.00	.00	1.43

Note. Q = Question number

The expert report form can be found in Appendix E. The seven experts were 100% female (14.28% Mixed Race/Ethnicity; 85.72% Caucasian) and had 6.57 years (*SD* = 4.64) experience as child therapists and 5.35 (*SD* = 3.04) years of experience working with children with trauma. Item statistics for item clarity and relevance can be found in Table 4 and Table 5. Items showed adequate levels of clarity and relevance, and thus were all retained. Minor suggestions on phrasing from the experts was integrated and the modified measure, which integrated both parent and expert feedback, and was administered to the final sample can be found in Appendix F.

Table 4 Expert Rating of Clarity of ECTSS Items

Clarity Items	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
Minimum	3.00	4.00	4.00	3.00	2.00	2.00	3.00	3.00	3.00	2.00	2.00	2.00	2.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	3.86	4.00	4.00	3.71	3.57	3.29	3.57	3.86	3.71	3.71	3.71	3.57	3.43
SD	0.38	0.00	0.00	0.49	0.79	0.95	0.53	0.38	0.49	0.76	0.76	0.79	0.98
Clarity Items	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26
Minimum	1.00	2.00	2.00	4.00	2.00	3.00	3.00	3.00	3.00	4.00	4.00	3.00	3.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	3.43	3.71	3.29	4.00	3.71	3.86	3.71	3.71	3.71	4.00	4.00	3.71	3.86
SD	1.13	0.76	0.76	0.00	0.76	0.38	0.49	0.49	0.49	0.00	0.00	0.49	0.38

Clarity Items	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39
Minimum	3.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00	2.00	4.00	2.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	3.86	3.71	3.86	3.71	4.00	3.86	3.86	3.86	3.86	3.86	3.71	4.00	3.71
SD	0.38	0.49	0.38	0.49	0.00	0.38	0.38	0.38	0.38	0.38	0.76	0.00	0.76
Clarity Items	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52
Minimum	3.00	3.00	3.00	3.00	4.00	3.00	4.00	3.00	3.00	3.00	4.00	3.00	4.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
M	3.86	3.86	3.86	3.86	4.00	3.86	4.00	3.86	3.86	3.85	4.00	3.86	4.00
SD	0.38	0.38	0.38	0.38	0.00	0.38	0.00	0.38	0.38	.378	.00	.378	.00
Clarity Items	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63		
Minimum	4.00	3.00	4.00	3.00	3.00	4.00	4.00	3.00	3.00	3.00	4.00		
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00		
M	4.00	3.86	4.00	3.86	3.86	4.00	4.00	3.86	3.86	3.86	4.00		
SD	.00	.38	.00	.38	.38	.00	.00	.38	.38	.38	.00		

Note. Q = Question number

Table 5. Expert Rating of Relevance of ECTSS Items

Relevance Items	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
Minimum	5.00	5.00	3.00	4.00	4.00	3.00	5.00	4.00	3.00	3.00	3.00	3.00	3.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
M	5.00	5.00	4.43	4.86	4.71	4.57	5.00	4.83	4.57	4.71	4.43	4.00	3.86
SD	.00	.00	.98	.38	.49	.79	.00	.41	.79	.76	.79	1.00	.90
Clarity Items	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26

Minimum	3.00	4.00	2.00	2.00	3.00	2.00	4.00	3.00	3.00	4.00	4.00	3.00	3.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
M	4.29	4.57	4.57	3.43	4.14	4.14	4.71	4.29	4.00	4.71	4.57	3.86	4.00
SD	.76	.53	1.13	.98	.69	1.07	.49	.95	1.00	.49	.53	.90	1.00
Clarity Items	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39
Minimum	3.00	3.00	3.00	4.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
M	4.00	4.43	4.43	4.86	4.43	4.14	4.57	4.29	4.29	4.14	4.43	4.43	4.14
SD	.82	.79	.79	.38	.79	.90	.53	.95	.76	.90	.79	.79	.90
Clarity Items	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52
Minimum	3.00	3.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	4.00	4.00	3.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
M	4.57	4.29	4.43	4.43	4.43	4.71	4.57	4.57	4.43	4.29	4.57	4.71	4.57
SD	0.79	0.76	0.79	0.79	0.79	0.49	0.79	0.79	0.98	0.95	0.53	0.49	0.79
Clarity Items	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63		
Minimum	4.00	5.00	4.00	3.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00		
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00		
M	4.86	5.00	4.86	4.57	4.86	2.86	3.00	2.86	3.29	3.14	3.00		
SD	0.38	0.00	0.38	0.79	0.38	1.77	1.83	1.77	2.21	2.12	1.83		

Note. Q = Question number

Hypothesis Two: Principal Components Analysis

A principal component analysis with promax rotation was used. The critical Eigen values were set at one. Initially, the factorability of the 56 items was examined.

The seven items used in the Response Style scale were not included in the analysis, as they were not theoretically related to the construct of trauma. The Kaiser-Meyer-Olkin measure of sampling adequacy was .77, which is above the recommended value of .6 (Tabachnick and Fidell, 2001). Bartlett's test of sphericity was significant (χ^2 (1540) = 3916.67 $p < .001$) indicating the correlation matrix was not an identity matrix and was appropriate for a factor model; thus, correlations were large enough to warrant a factor analysis. Additionally, communalities for all items were above .50, which provided support for adequate sample size of 150 (Worthington & Whittaker, 2006).

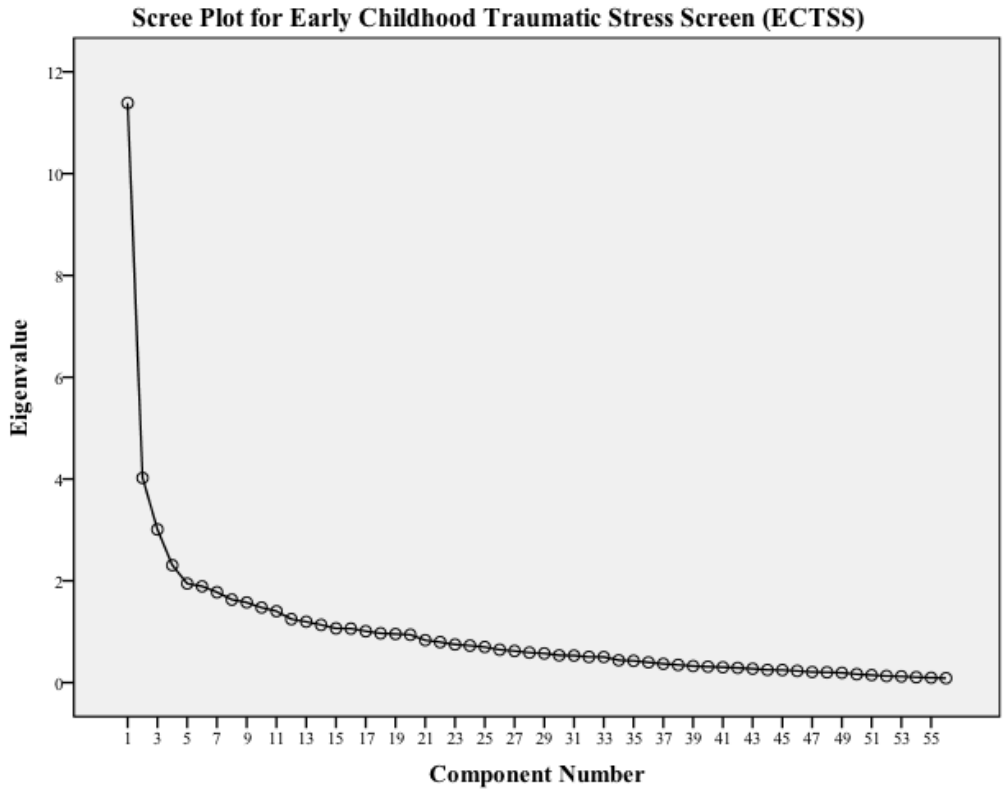
A parallel analysis was conducted, which randomly generated Eigenvalues over 1,000 iterations. Table 6 shows the actual Eigenvalues from the analysis as well as the simulated Eigenvalues generated from the parallel analysis. In addition to the parallel analysis, the Scree Plot (see Figure 1) was also examined to determine how many factors to retain. Results of the parallel analysis and Scree Plot supported a four-factor model, with eigenvalues for the real data being larger than the simulated data for the first four factors. Items that failed to load on any factor (< .4) were individually removed and model was parsed down to include the strongest items related to the factors. After each removal the analysis was rerun. The final solution accounted for 49.17% of the variance in the sample.

Table 6. Actual Eigenvalues from Initial Principle Component Analysis Extraction and Simulated Eigen Values from Parallel Analysis

Component	Actual Eigen Value	Simulated Eigen Value	Component	Actual Eigen Value	Simulated Eigen Value
1	11.39	2.43	29	0.57	0.86
2	4.02	2.29	30	0.54	0.83
3	3.01	2.18	31	0.54	0.80
4	2.31	2.09	32	0.51	0.77
5	1.95	2.01	33	0.50	0.74
6	1.89	1.93	34	0.44	0.71
7	1.78	1.86	35	0.43	0.68
8	1.63	1.80	36	0.40	0.65
9	1.58	1.73	37	0.37	0.63
10	1.48	1.68	38	0.35	0.60
11	1.40	1.62	39	0.33	0.57
12	1.25	1.56	40	0.31	0.55
13	1.20	1.51	41	0.30	0.52
14	1.13	1.46	42	0.29	0.50
15	1.07	1.41	43	0.27	0.47
16	1.06	1.36	44	0.25	0.45
17	1.01	1.31	45	0.25	0.42
18	0.97	1.27	46	0.23	0.40
19	0.96	1.23	47	0.21	0.38
20	0.94	1.18	48	0.20	0.36
21	0.83	1.15	49	0.19	0.33
22	0.80	1.11	50	0.17	0.31
23	0.75	1.07	51	0.15	0.29

24	0.73	1.03	52	0.13	0.27
25	0.70	1.00	53	0.12	0.24
26	0.65	0.96	54	0.11	0.22
27	0.62	0.93	55	0.10	0.20
28	0.59	0.90	56	0.09	0.17

Figure 2. Scree Plot for Early Childhood Traumatic Stress Screen Factors



The final analysis resulted in retention of the empirically supported four-factor model. The first factor consisted of eight items and was labeled Arousal and Hyper-Reactivity (ECTSS-ARH). The second factor consisted of seven items and was labeled Fearful Attachment (ECTSS-FA). The third factor consisted of seven items and was labeled Intrusion and Re-experiencing (ECTSS-I). The forth factor consisted of six items and was labeled Avoidance and Negative Cognition and Mood (ECTSS-AVN). Table 7 lists the standardized loadings without the suppression of low loadings (< . 3). Table 8 lists the standardized loadings for each of the items and their respective factors with suppression of low loadings (< . 3).

Table 7. Early Childhood Traumatic Stress Screen (ECTSS) Item Loadings Without Suppression of Low loadings

	Factors			
Items	Arousal and Hyper-Reactivity	Fearful Attachment	Intrusion and Re-experiencing	Avoidance and Negative Cognition and Mood
Cries without good reason	0.72	.00	-0.15	0.15
Gets upset or angry easily	0.87	-0.14	-0.06	-0.03
Scares easily.	0.15	0.60	0.14	0.04
Is clingy.	.00	0.76	-0.03	-0.22
The same ideas show up over and over in my child's play, like someone getting sick, hurt, or dying.	0.10	0.19	0.58	-0.13
Startles easily with loud or unusual noises.	0.09	0.64	0.16	-0.09
Is afraid of being left alone.	0.15	0.6	0.1	0.06
Has bad dreams or nightmares.	0.44	-0.03	0.21	0.14
Tantrums more than other children his/her age.	0.81	0.01	-0.08	-0.01

Has flashbacks to upsetting things. (This may be seen by a sudden change in mood, a blank stare, or shaking).	0.19	-0.05	0.48	0.23
Is irritable or cranky.	0.76	0.05	-0.06	-0.02
Talks less than he/she used to.	0.09	0.02	-0.22	0.72
Is shy.	-0.23	0.54	-0.24	0.49
Says things like "people are bad" or "the world is a bad place."	-0.18	0.03	0.59	0.13
Looks worried if he/she is not near me.	0.01	0.70	0.08	0.05
Talks over and over about an unpleasant event.	-0.22	0.14	0.70	-0.21
Has a hard time falling asleep.	0.64	0.09	-0.01	-0.16
Has a difficult time calming down when he/she gets upset.	0.65	0.17	0.04	0.04
Harms himself/herself on purpose.	0.49	0.22	0.11	-0.06
Seems fearful or worried.	0.05	0.37	-0.01	0.51
Has a strong reaction to reminders of upsetting things.	0.21	-0.18	0.58	0.05
Does not talk about things that scared him/her.	-0.16	0.09	0.11	0.48
Feels guilt or shame.	-0.10	-0.19	0.33	0.63
Explores his/her environment less than he/she used to.	0.13	-0.17	0.03	0.74
Says she/he doesn't feel well when there does not seem to be a medical reason.	-0.06	0.03	0.64	0.23
Has a hard time separating from me.	-0.02	0.71	-0.14	0.04
Has unusual interest in his/her own or others' private body parts.	-0.02	-0.01	0.67	-0.08

Table 8. Early Childhood Traumatic Stress Screen (ECTSS) Item Loadings

	Factors			
Items	Arousal and Hyper-Reactivity	Fearful Attachment	Intrusion and Re-experiencing	Avoidance and Negative Cognition and Mood
Cries without good reason	.72			
Gets upset or angry easily	.87			
Scares easily.		.60		
Is clingy.		.76		

The same ideas show up over and over in my child's play, like someone getting sick, hurt, or dying.			.58	
Startles easily with loud or unusual noises.		.64		
Is afraid of being left alone.		.60		
Has bad dreams or nightmares.	.45			
Tantrums more than other children his/her age.	.81			
Has flashbacks to upsetting things. (This may be seen by a sudden change in mood, a blank stare, or shaking).			.48	
Is irritable or cranky.	.76			
Talks less than he/she used to.				.71
Is shy.		.54		.50
Says things like "people are bad" or "the world is a bad place."			.59	
Looks worried if he/she is not near me.		.70		
Talks over and over about an unpleasant event.			.70	
Has a hard time falling asleep.	.64			
Has a difficult time calming down when he/she gets upset.	.66			
Harms himself/herself on purpose.	.49			
Seems fearful or worried.				.51
Has a strong reaction to reminders of upsetting things.			.60	
Does not talk about things that scared him/her.				.48
Feels guilt or shame.				.63
Explores his/her environment less than he/she used to.				.74
Says she/he doesn't feel well when there does not seem to be a medical reason.			.64	
Has a hard time separating from me.		.71		
Has unusual interest in his/her own or others' private body parts.			.67	

Hypothesis Three: Subscale Cut-Points

Clinically significant symptoms on a trauma subscales were determined by a 1.5 standard deviation elevation above a mean score. Cut-points for overly positive and overly negative response styles were also calculated. Higher Scores indicated the responder is endorsing more negative items about their child (e.g., lying, whining, being hard to be around), whereas lower scores indicated more positive responding. Subscale statistics including cut score are reported in Table 9. For the Response Style subscale (ECTSS-RS) scores at or below 8 indicate an overly positive response style and a tendency to minimize symptoms, whereas scores at or above 20 indicate an overly negative response style and a tendency to amplify symptoms.

Table 9. Subscale Statistics

Subscale	M	SD	Possible Range	Actual Range	Cut-Score
Arousal and Hyper-Reactivity	18.56	5.59	8-32	8-31	27
Fearful Attachment	14.91	4.87	7-28	7-28	22
Intrusion and Re-Experiencing	9.42	3.20	7-28	7-20	11
Avoidance and Negative Cognition and Mood	8.45	2.44	6-24	6-20	12
Response Style	13.83	3.70	7-28	7-25	(overly positive) 8 (overly negative) 20

Hypothesis Four: Trauma Composite Score

The correlation between the subscales theoretically related to trauma were examined to determine if an overall trauma composite score for the measure would be appropriate. Correlations should be in the slight to moderate range, meaning that correlations should fall between .2 and .7 (Hamill, Brown, & Bryant, 1992). These correlations are large enough to indicate a relationship, but small enough as to imply that constructs are still empirically related, but separate. Results of correlation between measures are presented in Table 10. These results indicate significant slight to moderate correlations between all subscales on the measure, which provide support for the creation of a trauma composite total score.

Table 10. Correlation Between Subscales of the ECTSS

	ECTSS-I	ECTSS-AVN	ECTSS-ARH	ECTSS-FA
ECTSS-I	1.00	.34**	.36**	.21**
ECTSS-AVN		1.00	.28**	.39**
ECTSS-ARH			1.00	.45**
ECTSS-FA				1.00

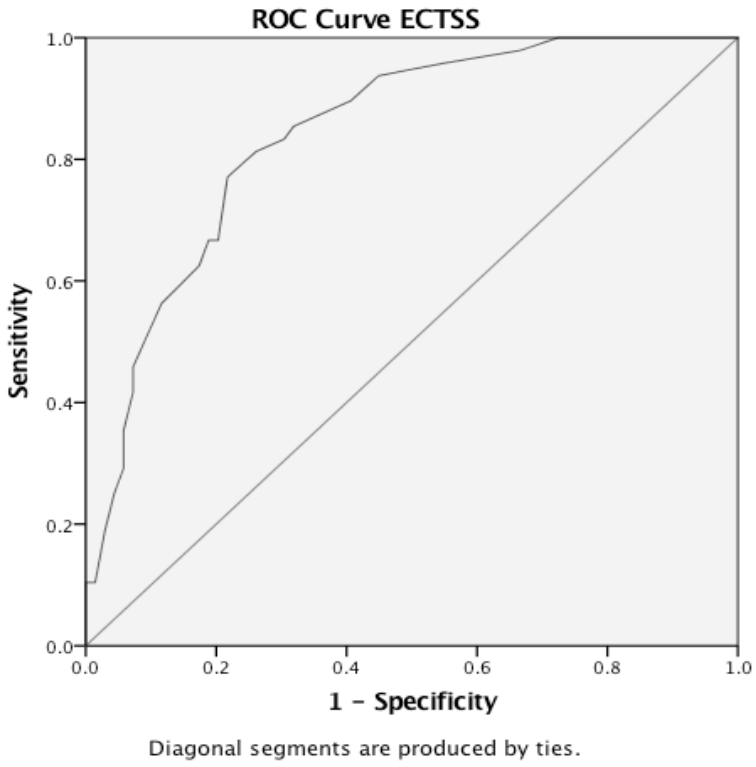
Note. ** refers to $p < .01$. ECTSS-I = Early Childhood Traumatic Stress Screen- Intrusion and Re-experiencing. ECTSS-AVN = Early Childhood Traumatic Stress Screen- Avoidance and Negative Cognition and Mood. ECTSS-ARH = Early Childhood Traumatic Stress Screen- Arousal and Hyper-Reactivity. ECTSS-FA = Early Childhood Traumatic Stress Screen–Fearful Attachment.

Scale statistics for the ECTSS Trauma Composite (ECTSS – TC) were also computed. The ECTSS – TC had a possible range of 27-108 (actual range = 29-79), and a mean score of 49.90 (*SD* = 11.70).

Hypothesis Five: ROC Curve Analysis

The area under the curve was .84 (95% CI = .77 - .91; $p < .001$), demonstrating an 84% likelihood that if a clinically significant cut-score on the TSCYC were obtained, a randomly selected child would have a higher ECTSS score than would a randomly selected child who did not meet the clinical threshold on the TSCYC. ROC curve areas of .80 - .90 are considered good discriminators and .90-1 are considered excellent (Swets, 1996). Thus, the ECTSS is a good discriminator of children who meet the clinical threshold for significant trauma symptoms. Figure 2 provides the ROC curve for the ECTSS composite score.

Figure 3. ROC Curve for Early Childhood Traumatic Stress Screen (ECTSS)



Because the ECTSS is meant to be a first-line screening tool and there is an emphasis on minimizing false negative results; false negative results were weighted higher than the false positives when deriving a cut score. The optimal criterion score took into account the cost of different decision categories (e.g., false positive) using the generalized Youden index (Schisterman, Perkins, & Liu, 2005), with 1 as the value for cost false positive and to 1.5 as the value for false negative, identified a cut off score of 31. Sensitivity for the cut score was .81 and specificity was .74, which met Mouthaan, Sijbrandij, Reitsma, Gersons, and Olff's (2014) recommendation (.80 sensitivity or above) for PTSD screening instruments. Results for the cut score and corresponding specificity, sensitivity, and positive and negative predicative values are provided in Table 11.

Table 11. Performance Measures for ROC Curve Cut-off (31) using the Generalized Youden Method for deriving the Cut-Score

	Value	Lower Limit (95% CI)	Upper Limit (95% CI)
Sensitivity	.81	.67	.91
Specificity	.74	.61	.84
Positive Predictive Value	.68	.55	.84
Negative Predictive Value	.84	.73	.91
Positive Likelihood Ratio	3.07	2.09	4.66
Negative Likelihood Ratio	.26	.14	.47

Hypothesis Six: Reliability

Table 12 showcases the internal consistencies and scale statistics of the ECTSS. Interpretation of findings used George and Mallery's (2003) descriptions of: $\alpha \geq 0.9$ is excellent; $0.9 > \alpha \geq 0.8$ is good; $0.8 > \alpha \geq 0.7$ is acceptable; $0.7 > \alpha \geq 0.6$ is questionable; $0.6 > \alpha \geq 0.5$ is poor; $0.5 > \alpha$ is unacceptable. The coefficient alpha was .85 for the Arousal and Hyper-Reactivity subscale, .81 for the Fearful Attachment subscale, .75 for the Intrusion and Re-experiencing subscale, .68 for the Avoidance and Negative Cognition and Mood subscale, and .72 for the Response Style subscale. The internal consistency for the Composite Trauma scale (all sub-scales except the Response Style subscale) was .87. Subscales and the composite scale generally fell within the good to acceptable range. The Trauma Composite scale approached the excellent range. The average inter-item correlation was .41, .37, .30, .25, .26, and .20, respectively for each of the domains.

Table 12. Scale Statistics

Subscale and Composite Scale	α	Average Inter-Item Correlation
Arousal and Hyper-Reactivity	.85	.41
Fearful Attachment	.81	.37
Intrusion and Re-Experiencing	.75	.30
Avoidance and Negative Cognition and Mood	.68	.25
Response Style	.72	.26
Trauma Composite	.87	.20

Hypothesis Seven: Concurrent Validity

To further assess validity of the ECTSS the correlation between the TSCYC Posttraumatic Stress Intrusion scale (PTS-I), Posttraumatic Stress Avoidance scale (PTS-AV), Posttraumatic Stress Arousal scale (PTS-AR), and Posttraumatic Stress Total (PTS-TOT) was examined between similar constructs identified on the ECTSS. The TSCYC Response Level (RL) correlation was examined for the ECTSS Response Style (ECTSS-RS) scale. Additionally, because the construct of Fearful Attachment emerged, and did not theoretically correlate with any measure on the TSCYC, the Pediatric Symptom Checklist Fearful subscale (PEDS –F) was used to establish concurrent validity. To be accepted as evidence of concurrent validity, the correlation coefficient between the two instruments needed to reach or exceed the minimum of r = .35 (Hamill, Brown, & Bryant, 1992). Correlations coefficients were interpreted as: r < .20 slight, almost trivial

relationship; .20-.40 is low, definite, but small relationship; .40-.70 is moderate, substantial relationship; .70-.90 is high, marked relationship; .90-1.0 is very high, pronounced relationship (Williams, 1968, p.134). Table 13 contains all the scale correlations between ECTSS subscales and scales and other pre-established measures.

` All sub-scales and the overall Trauma Composite scale (ECTSS- TC) met Hamill, Brown, and Bryant's (1992) criteria for demonstrating concurrent validity. All sub-scales of the ECTSS demonstrated significant moderate or high relationships with pre-established measures. Importantly, the trauma composite score also demonstrated a significant high relationship with the total trauma composite score of the TSCYC.

Table 13. Concurrent Validity of Early Childhood Stress Screen (ECTSS) and Other Measures of Trauma for Young Children

Correlated Measure	Early Childhood Traumatic Stress ScreenSubscales and Composite Scale					
	ECTSS-I	ECTSS-AVN	ECTSS-ARH	ECTSS-FA	ECTSS-RS	ECTSS-TC
TSCYC PTS-I	.55**					
TSCYC PTS-AV		.45**				
TSCYC PTS-AR			.67**			
PEDS-F				.48**		
TSCYC RL					.81**	
TSCYC PTS-TOT						.66**

Note. ** refers to p < .01. TSCYC PTS-I = Trauma Symptom Checklist for Young Children - Posttraumatic Stress Intrusion scale. TSCYC PTS-AV = Trauma Symptom Checklist for Young Children - Posttraumatic Stress Avoidance scale. TSCYC PTS-AR = Trauma Symptom Checklist for Young Children - Posttraumatic Stress Arousal scale. TSCYC PTS-TOT = Trauma Symptom Checklist for Young Children - Posttraumatic Stress Total. TSCYC RL = Trauma Symptom Checklist for Young Children - Response Level. PEDS-F =Pediatric Symptom Checklist – Fearful. ECTSS-I = Early Childhood Traumatic Stress Screen- Intrusion and Re-experiencing. ECTSS-AVN = Early Childhood Traumatic Stress Screen- Avoidance and Negative Cognition and Mood. ECTSS-ARH = Early Childhood Traumatic Stress Screen- Arousal and Hyper-Reactivity. ECTSS-FA = Early Childhood Traumatic Stress Screen–Fearful Attachment. ECTSS-RS = Early Childhood Traumatic Stress Screen– Response Style. ECTSS-TC = Early Childhood Traumatic Stress Screen– Trauma Composite.

Chapter V: Discussion

The importance of researching and providing intervention to very young children (under six) who have experienced trauma has recently emerged as a focal topic in the literature, largely dispelling the prior belief that very young children are robust to the affects of early PTE exposure (Miller-Graff, Galano, & Graham-Bermann, 2016; Scheeringa, Zeanah, Myers, & Putnam, 2005). In fact, exposure to maltreatment has additive effects on posttraumatic stress risk when it occurs in early life (Bonanno, 2004; De Young, Kenardy, & Cobham, 2011b). Despite this fact, as Miller-Graff, Galano, and Graham-Bermann (2016) pointed out, all areas of preschool PTSD, including assessment, diagnosis, and treatment, remain highly understudied. In fact, only the latest version of the DSM, DSM-V, recognized the clinical importance of trauma in young children and how it presented differently than in adults and older children, resulting in the creation of the PTSD, Preschool Subtype (American Psychiatric Association, 2013).

Early PTE exposures affect not only later mental health but also typical cognitive and emotional development (Delaney-Black et al., 2002; Enlow, Blood, & Egeland, 2013; Samuelson, Krueger, Burnett, & Wilson, 2010; Schore, 2001; Teicher, Anderson, & Polcari, 2012). Recognizing both the immediate impact and the long-ranging implications of PTE exposure in young children, a growing need has arisen to properly assess and diagnosis children who may need intervention services for maladaptive responses to PTE (Miller-Graff, Galano, & Graham-Bermann, 2016; Scheeringa, Zeanah, Myers, & Putnam, 2005).

Low socioeconomic status (SES) also compounds the issue. Traditionally, low SES populations struggle disproportionately with poor mental health. Enlow, Blood, &

England (2013) attributed this, in part, to increased trauma exposure and worse PTSD symptoms among these populations. This motivated the need for research with young children in these disadvantaged populations.

Primarily, this study sought to create a brief screening measure for traumatic stress in very young children. Intended for use in the first stage of a multi-stage screening process, the brief measure produced by this study can reduce the number of children falsely identified as not at-risk, or not screened at all, following PTE exposure. In order to meet this goal, the ECTSS was designed to provide an instrument quick in administration, scoring, and interpretation. The final ECTSS item pool had a Flesh-Kincaid reading grade level of 3.4, making it simple enough for most caregivers to complete independently, further reducing time and expense.

Factor analysis identified a four-factor model for the traumatic stress response in very young children: (1) Arousal and Hyper-Reactivity; (2) Fearful Attachment; (3) Intrusion and Re-Experiencing; and (4) Avoidance and Negative Cognition and Mood. Notably, these factors correspond to the Preschool Subtype of PTSD in the DSM-V (American Psychiatric Association, 2013) and emerging literature on how trauma affects young children.

The literature has consistently noted increased arousal, including irritability, aggressive behavior, and fussiness, in young children exposed to trauma (Gigengack, van Meijel, Alisic, & Lindauer, 2015; Modrowski, Miller, Howell, & Graham-Bermann, 2013; Pynoos et al., 2009). In fact, symptoms of hyper-arousal are among the most frequent symptoms reported in children with maladaptive response following PTE exposure (Gigengack, van Meijel, Alisic, & Lindauer, 2015). Modrowski, Miller,

Howell, and Graham-Bermann (2013) findings showed the majority of children who witnessed intimate partner violence (IPV), a form of PTE, had more temper tantrums, irritability, and fussiness than their same aged peers who had not witnessed IPV. Pynoos, et al. (2009), further found heightened emotional reactivity in children with PTSD with children tantruming longer and more frequently (Pynoos, et al., 2009). As the most behaviorally anchored criteria, and thus the most readily observable in children, the DSM-V made few changes to the criteria for preschool-aged children (American Psychiatric Association, 2013). Neurobiology also supports the robustness of this factor. In early childhood, the neural pathways responsible for processing stress undergo a period of critical development (Schore, 2001). Exposure to PTE in early childhood alters these pathways (Belsky & de Hann, 2011; Teicher, Anderson, & Polcari, 2012; Schore, 2001). Consistent with the literature, Arousal and Hyper-Reactivity in young children created the strongest factor for the ECTSS.

The ECTSS also assessed impairments in attachment, a domain rarely assessed by current instruments, but one the literature correlates with PTE exposure in young children. Although the literature in the area is still developing, the existent research links maltreatment among preschool-aged children to less secure and more disorganized styles of attachment (Pickreign Stronach, Toth, Rogosch, Oshri, Manly, & Cicchetti, 2011; Zeanah, Scheering, Boris, Hellers, Smyke, & Trapani, 2004). Pynoos et al. (2009) also reported symptoms of fearful attachment with children struggling to separate from their caregivers and relying on their parents for physical and emotional support more than non-maltreated children. In reaction to this literature the DSM-V created a separated section for “Trauma and Stressor-Related Disorders”, which provided criteria for Reactive

Attachment Disorder and Disinhibited Social Engagement Disorder in the same overarching domain as PTSD, Preschool subtype (American Psychiatric Association, 2013). In other words, common psychopathology in response to PTE is heterogeneous, with some children meeting criteria for PTSD and others developing Attachment or Adjustment Disorders. The ECTSS importantly screens for impaired attachment in young children, and the Fearful Attachment subscale was second strongest factor in assessing maladaptive responses to PTE in young children.

The quality of the parent-child relationship has been shown to inversely relate to PTE exposure and development of psychopathology (Fergusson, Boden, and Horwood, 2008; Milot, St-Laurent, Ethier, & Provost, 2010). This relationship between childhood trauma and impaired attachment may extend beyond childhood into adulthood. Wright, Crawford, and Del Castillo's (2009) theoretical model demonstrated a relationship between emotional abuse and neglect in childhood with the security and quality of attachment in adulthood, finding individuals who were emotionally abused as children had poorer relationships with others as adults. Identifying deficits in attachment can help shape treatment goals and address impairments in young children before they develop into lasting interpersonal difficulties.

Very young children relive and re-experience traumatic events in an appreciably different way than adults. Children frequently describe the trauma via story narrative or reenact the trauma through play (Miller-Graff, Galano, & Graham-Bermann, 2016; Modrowski, Miller, Howell, & Graham-Bermann, 2013; Pynoos et al., 2009). Frequently endorsed symptoms of re-experiencing (e.g., via play) strongly loaded on the ECTSS Intrusion and Re-Experiencing factor. Pynoos, et al. (2009), also suggested less overt

symptoms of re-experiencing in younger children, such as upset stomach. These less overt symptoms also loaded on the Intrusion and Re-Experiencing subscale of the ECTSS (i.e., "Says she/he doesn't feel well when there does not seem to be a medical reason"). Overall, Intrusion and Re-Experiencing scored as the third strongest factor of the ECTSS.

From a neurobiological standpoint, the hippocampus, strongly associated with contextual memory and learning, undergoes significant development in the first few years of life (Pynoos et al., 2009). Children exposed to abuse and neglect have consistently shown deficits in this region of the brain (Majer, Nater, Lin, Capuron, & Reeves, 2010; Pastalkova, Itskov, Amarasingham, & Buzaki, 2008; Teicher, Anderson, & Polcari, 2012), diminishing their stress threshold such that a lower level of stimulus (a trauma reminder) may trigger heightened arousal. This means in comparison to older children and adults, children whom re-experience trauma may have stronger negative associations formed with a stimulus (trauma reminder) and display heightened behavioral reactions to the intrusions. This relationship also explains why the Arousal and Hyper-Reactivity subscale most strongly correlated with the Intrusion and Re-Experiencing subscale.

Avoidance is a highly internal phenomenon, making diagnosis difficult from a behavioral standpoint (Pynoos et al., 2009). Avoidance symptoms received less frequent endorsement when compared to any other domain (e.g., Intrusion) among the children with PTE exposure (Scheeringa, Peebles, Cook, & Zeanah, 2001). Numerous works cited the DSM-IV's requirement of three avoidance symptoms as one of the largest hurdles for the accurate diagnosis of PTSD in young children (Gigengack, van Meijel, Alisic, & Lindauer, 2015; Scheeringa, Meyers, Putnam, & Zeanah, 2012; Scheeringa, Peebles, Cook, & Zeanah, 2001; Scheeringa, Zeanah, & Cohen, 2011). The original

DSM-IV criteria were not normed on a population under the age of 15, and partially because of this fact, Scheeringa, Zeanah and Cohen (2011) argued the criteria were developmentally inappropriate. Said differently, this might have led to false negative diagnoses and potential non-treatment for children who had symptomatology and impairment that could warrant a diagnosis. In fact, studies comparing the DSM-IV and DSM-V algorithms found diagnoses tripled with the DSM-V's new preschool subtype, attributed largely to changes in requirements in the number of avoidance symptoms needed (Scheeringa, Meyers, Putnam, &, Zeanah, 2012). The new criteria for "PTSD for Children 6 Years and Younger" in the DSM-V also included "increased frequency of negative emotional states" under criterion C (Avoidance), replacing the DSM-IV's symptoms of "emotional constriction and estrangement from others" (American Psychiatric Association, 2013; Pynoos et al., 2009). In other words, using the DSM-V criteria, preschool aged child can have one symptom in either avoidance or negative emotional state to meet requirements for Criterion C, whereas in the past they would have needed three symptoms in avoidance or emotional constriction and estrangement from others. Whereas adults with PTSD express aloneness or emotional numbing, young children have a limited emotional vocabulary; instead, they express "feeling bad" and have a difficult time experiencing positive emotions (Pynoos et al., 2009). In alignment with DSM-V criteria, items associated with Avoidance and Negative Cognition and Mood, loaded on one factor, further bolstering the clinical and diagnostic utility of the ECTSS.

Limitations

Although the ECTSS fulfills an important need for effectively screening very young children in poverty from diverse backgrounds, conducting future research in different regions (i.e., outside urban Midwest) may improve the utility of the scale. Similar results in different regional areas would further substantiate the validity of the factor structure. Additionally, the sample used in the study was a sample of convenience and methods such as stratified random sampling could strengthen the findings.

Due to the young age of the children in the sample, child caregivers reported these data. Because caregiver-report data can capture bias, the measure included a response style scale; however, the inclusion of clinician observation along with this data would strengthen the existing measure.

In general subscales and the overall trauma composite score had an internal consistency in the "good" range. Additional measures of reliability, such as the inclusion of inter-rater reliability and test-retest reliability, would strengthen existing psychometric information.

Future Research

This study has prompted several areas of future research for both the ECTSS and the broader field of childhood trauma. Namely, additional research lines in both validity and reliability would strengthen the ECTSS. Additionally, in the broader domain of childhood trauma, more research is needed to understand the relationship between childhood trauma and attachment.

With regards to validity, a confirmatory factor analysis (CFA) would bolster empirical support for the factor structure identified by the initial analysis. Collecting data for the CFA in a different region than the ECTSS was normed on would, additionally, simultaneously confirm whether or not the structure held up in a different region.

Future research on the ECTSS should also focus on strengthening reliability through test-retest and inter-rater reliability. Test-retest reliability would ensure test results remain consistent across time, whereas inter-rater reliability would indicate what effect, if any, different reporters have on the ECTSS measure.

The Response Style subscale is intended to identify individuals who have a tendency to over or under report symptoms. Although the empirical cut-point flagged approximately the top and bottom 5% of respondents and correlated strongly with the TSCYC's response subscale, more research could confirm whether or not the extremes on this subscale are truly predictive of a tendency to over or under report on the ECTSS.

The Fearful Attachment subscale required the consideration of several factors to interpret its findings. First, the quality of the parent-child attachment may predict both exposure to and the intensity of trauma symptoms, so it is unclear if these deficits existed before the trauma. However, even in this case, the presence of this poor attachment, in combination with other traditional of symptoms of trauma (e.g., arousal, intrusion), may still indicate trauma occurred and is having a measureable impact on the child. Secondly, impaired attachment may be both a risk factor and an outcome of trauma. Children with poor attachment may be at greater risk for trauma or have poorer reactions to trauma, but the impact of trauma may further weaken attachment. Longitudinal methods tracking the

progression and development of maladaptive attachment would offer insight into these considerations.

Clinical Implications

The ECTSS directly corresponded to the new DSM-V criteria (American Psychiatric Association, 2013) for preschool PTSD and resulted in a short 34-item measure. Three of the measure's factors aligned with domains of the preschool subtype of PTSD in the DSM-V, and the fourth factor aligned with the recent literature regarding impairments in attachment following PTE exposure. The composite score provided a quick means to flag children as high risk for maladaptive response following PTE exposure. All subscales and the composite measure of the ECTSS correlated strongly with pre-established measures of trauma such as the TSCYC. From a clinical standpoint, the ECTSS provided clinicians and other medical professionals with an efficient means to assess if concerns for maladaptive response for trauma were present and to determine the areas of greatest impact (e.g., avoidance, arousal). Additionally, the presence of the attachment subscale highlighted potential treatment goals given the correlation between the quality of the parent-child relationship and resilience following PTE exposure (Fergusson, Boden, and Horwood, 2008; Milot, St-Laurent, Ethier, & Provost, 2010).

Beyond alignment with the DSM-V criteria, the ECTSS Response Style subscale allowed clinical practitioners to examine under and over-reporting of symptoms. Because the distribution of responses for this response subscale fell within a bell-curve (both considering kurtosis and skew), the cut point evenly flagged responders in approximately the top 5% for over or under reporting symptoms and strongly correlated

with other measures (i.e., TSCYC) of response style. These items (which are identified in the scoring section of Appendix G) assist clinicians in more accurately assessing the validity of the responses provided by the reporter, which is of great importance given that the perpetrator of child maltreatment is often someone close to the child, and in most cases, a parent (U.S. Department of Health and Human Services, 2012).

The updated DSM-V criteria, NIMH guidelines, and growing research regarding the importance of identifying trauma in young children all elucidated the need for a first-line screening tool. Given the potential consequences of PTE exposure, children require screening after PTEs to identify potential maladaptive responses in need of more intensive assessment and potential treatment. Moreover, to improve identification rates, these screening measures must be simple and efficient enough for a variety of professionals (e.g., psychologists, medical doctors, advanced nurse practitioners) to administer, score, and interpret. The ECTSS provides such a screening tool, an important component for early intervention following PTE exposure and corresponded to updated research and diagnostic criteria. Appendix G provides the final item pool and scoring instructions for the ECTSS.

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APPENDICES

Appendix A: IRB Parent Permission Form

MARQUETTE UNIVERSITY
PARENT PERMISSION FORM
PRESCHOOL SCREEN FOR TRAUMA AND EMOTIONAL STRESS, SHORTER
Dr. Robert A. Fox
Professor of Counselor Education and Counseling Psychology and Director of the Penfield Behavior Clinic at Penfield Children's Center.

Your child has been invited to participate in this research study. Before you agree to allow your child to participate, it is important that you read and understand the following information. Participation is completely voluntary. Please ask questions about anything you do not understand before deciding whether or not to give permission for your child to participate.

PURPOSE: The purpose of this research study is to help develop a measure that can identify children who are having significant distress following an upsetting or difficult event. Your child will be one of approximately 300 participants in this research study.

PROCEDURES: I understand that the following procedures will be a part of this project: 1) answering two parent report measures about your child's feelings or behaviors 2) completing a 4-8 week follow up in which only the piloted measure will be administer again. For confidentiality purposes, your child's name will not be recorded. Referral services will be provided for you if your child is having a difficult time coping with a distressing or traumatic event.

DURATION: Your participation will consist of about 15 to 20 minutes of time during which you will be answering parent report forms about your child's behaviors and feelings.

RISKS: The risks associated with participation in this study are minimal, but could include bringing up potentially difficult content area for both the parent and the child. A mental health provider will be with you to help process any discomfort and to provide information about referral services as needed. If there are identifiable risks, list the risks and describe the safeguards in place to avoid these risks. Additionally, as with any therapeutic service, we are required to report child abuse, child neglect, elder abuse or intent to harm self or others.

BENEFITS: The benefits associated with participation in this study include gaining a better understanding into your child's behaviors and feelings. Additionally, you are helping to improve the research on early identification of significant distress following a traumatic event in other children.

CONFIDENTIALITY: All information in this study will be kept confidential. All your child's data will be assigned an arbitrary code number rather than using your child's name or other information that could identify your child as an individual. When the results of the study are published, your child will not be identified by name.

Voluntary Nature of Participation: Your child's participation in this study is completely voluntary and your child may withdraw from the study and stop participating at any time without penalty or loss of benefits to which your child is otherwise entitled. Please provide a written request to the clinician you are receiving therapeutic services from to have your child withdrawn to the study.

Contact Information: If you have any questions about this research project, you can contact Dr. Robert Fox, Professor of Counselor Education and Counseling Psychology and Director of the Penfield Behavior Clinic at Penfield Children's Center at Robert.fox@mu.edu. If you have questions or concerns about your child's rights as a research participant, you can contact Marquette University's Office of Research Compliance at (414) 288-7570.

I HAVE HAD THE OPPORTUNITY TO READ THIS PARENT PERMISSION FORM, ASK QUESTIONS ABOUT THE RESEARCH PROJECT AND AM PREPARED TO GIVE MY PERMISSION FOR MY CHILD TO PARTICIPATE IN THIS PROJECT.

_____ _____

Parent's Signature(s) Date

_____

Parent's Name(s)

_____ _____

Researcher's Signature Date

Appendix B: Initial Item Pool for the Early Childhood Traumatic Stress Screen (ECTSS)

ECTSS

Instructions: A list of statements is below. Read each statement. Then, think about your child's thoughts, feelings, and behaviors in the last year. Circle the letter **A** for "**ALWAYS OR ALMOST ALWAYS**" if it happens daily. Circle **O** for "**OFTEN"** if it happens weekly. Circle **S** for "**SOMETIMES**" if it happens monthly or every other month. Circle **N** for "**NEVER OR ALMOST NEVER**" if it rarely or never happened in the last year. Mark only one letter for each statement. **Do not skip any statements.**

	Statement	Always/Almost Always	Often	Sometimes	Never/Almost Never
1.	My child acts out scary or upsetting events when she/he plays.	A	O	S	N
2.	The same ideas show up over and over in my child's play, like someone getting sick or dying.	A	O	S	N
3.	My child has bad dreams or nightmares.	A	O	S	N
4.	My child looks like he/she is in a fog/daze (seems tuned out/spaced out).	A	O	S	N
5.	My child seems to be daydreaming or lost in thought.	A	O	S	N
6.	My child has a strong reaction to reminders of upsetting things.	A	O	S	N
7.	My child seems to have flashbacks to upsetting things. (This may be seen by a sudden change in mood, a blank stare, or shaking).	A	O	S	N
8.	My child talks over and over about an unpleasant event.	A	O	S	N
9.	Certain places and/or people seem to make my child upset.	A	O	S	N
10.	My child stays away from places that bring up upsetting memories.	A	O	S	N

11.	My child stays away from activities that remind him/her of upsetting things.	A	O	S	N
12.	My child is afraid of adults.	A	O	S	N
13.	My child does not talk about things that scared him/her.	A	O	S	N
14.	My child tries not to hear or talk about violence.	A	O	S	N
15.	My child seems fearful or worried.	A	O	S	N
16.	It seems like my child feels guilt or shame.	A	O	S	N
17.	My child likes to play by himself/herself rather than with other children.	A	O	S	N
18.	My child is less social than other children his/her age.	A	O	S	N
19.	My child keeps to himself/herself.	A	O	S	N
20.	My child explores his/her environment less than he/she used to.	A	O	S	N
21.	My child says he/she is bad.	A	O	S	N
22.	My child says things like people are bad or the world is a bad place.	A	O	S	N
23.	My child is less happy than he/she used to be.	A	O	S	N
24.	My child talks less than he/she used to.	A	O	S	N
25.	My child is shy.	A	O	S	N
26.	My child cries without a good reason.	A	O	S	N
27.	When there does not seem to be a reason, my child has angry outbursts or temper tantrums.	A	O	S	N
28.	My child harms himself/herself.	A	O	S	N
29.	My child is very aware of his/her surroundings.	A	O	S	N
30.	My child looks around his/her environment for people or things that might be dangerous.	A	O	S	N
31.	My child wakes up often at	A	O	S	N

	night.				
32.	My child has a hard time falling asleep.	A	O	S	N
33.	Loud or unusual noises startle my child easily.	A	O	S	N
34.	My child is irritable or cranky.	A	O	S	N
35.	My child has a hard time sitting still.	A	O	S	N
36.	My child seems restless or hyper.	A	O	S	N
37.	My child scares easily.	A	O	S	N
38.	It is hard for my child to focus or concentrate.	A	O	S	N
39.	My child acts whiny.	A	O	S	N
40.	My child has a difficult time calming down when he/she gets upset.	A	O	S	N
41.	My child has tantrums more so than other children his/her age.	A	O	S	N
42.	My child's tantrums last longer than most children his/her age.	A	O	S	N
43.	My child seems to be more tense and jumpy than other children his/her age.	A	O	S	N
44.	My child gets upset or angry easily.	A	O	S	N
45.	My child does not respect people's personal space. For example, he/she touches strangers.	A	O	S	N
46.	My child has a hard time separating from me.	A	O	S	N
47.	My child is afraid of being left alone.	A	O	S	N
48.	My child does not want to sleep alone.	A	O	S	N
49.	My child looks worried if he/she is not near me.	A	O	S	N
50.	My child will hug strangers.	A	O	S	N
51.	My child is clingy.	A	O	S	N
52.	My child gets upset if I am not near them.	A	O	S	N
53.	My child hides food.	A	O	S	N

54.	My child has unusual interest in his/her own or others' private parts.	A	O	S	N
55.	My child was potty trained, but has started to wet the bed.	A	O	S	N
56.	My child acts younger than he/she used to (for example, started sucking his/her thumb).	A	O	S	N
57.	My child says she/he doesn't feel well when there does not seem to be a medical reason.	A	O	S	N
58.	It is hard to make my child happy.	A	O	S	N
59.	My child tells the truth no matter what the situation.	A	O	S	N
60.	I enjoy spending time with my child.	A	O	S	N
61.	My child is difficult to be around.	A	O	S	N
62.	My child has perfect manners.	A	O	S	N
63.	My child listens to commands the first time they are given.	A	O	S	N
64.	My child has a bad attitude.	A	O	S	N
65.	I need a break from my child.	A	O	S	N

Appendix C: Intake Form

Intake Form
Date_____

Child & Family Information

***Child Name:** _____ ***M F *Date of Birth:** _____

***Age:** _____

***Race:** _____

Mother: _____Age: _____Race: _____

Highest Education Obtained: _____

Father: _____Age: _____ Race: _____

Highest Education Obtained: _____

***Primary Caregiver marital status:** married never married divorced separated widowed

Does a primary caregiver receive public assistance: (WIC, rent assistance, SSI, W2, food stamps)

Y N

Household Income (circle one) $0-$9,999 $10,000-$14,999 $15,000-$22,999

$23,000-$33,999 $34,000-$49,999 $50,000-$74,999 $75,000 or more

Unknown

***Total # children under 18 in the home**:_____

Any current or past involvement with the Bureau of Milwaukee Child Welfare (BMCW)? Y N

Child Health

***Assessed for developmental delay**: Y N If no, concerns: _____

Agency: _____
Date: _____

*Results:
No Delays Cognitive Delay Language Delay Motor Delay

Type of services: ST PT OT Spec. Ed Other: _____

Appendix D: Parent Feedback Form

Thank you for taking time to provide us with valuable information that will assist in the identification of children who are experiencing toxic stress after trauma. **Your feedback is greatly valued**. When rating the questions please circle the level of clarity (clear meaning, somewhat clear, need more information, did not understand item). **Please circle your response**. A comment section is provided for additional feedback if you wish to provide it.

1) My child acts out scary or upsetting events when she/he plays.
    a. Clear meaning
    b. Somewhat clear
    c. Need more information to understand meaning
    d. Did not understand item
    e. Comments_____
    _____
    _____

2) The same ideas show up over and over in my child's play, like someone getting sick or dying.
    a. Clear meaning
    b. Somewhat clear
    c. Need more information to understand meaning
    d. Did not understand item
    e. Comments_____
    _____
    _____

3) My child has bad dreams or nightmares.
    a. Clear meaning
    b. Somewhat clear
    c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

4) My child looks like he/she is in a fog/daze (seems tuned out/spaced out).

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

5) My child seems to be daydreaming or lost in thought.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

6) My child has a strong reaction to reminders of upsetting things.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

7) My child seems to have flashbacks to upsetting things. (This may be seen by a sudden change in mood, a blank stare, or shaking).

    a. Clear meaning

    b. Somewhat clear

    c. Need more information to understand meaning

    d. Did not understand item

    e. Comments_____
    _____
    _____

8) My child talks over and over about an unpleasant event.

    a. Clear meaning

    b. Somewhat clear

    c. Need more information to understand meaning

    d. Did not understand item

    e. Comments_____
    _____
    _____

9) Certain places and/or people seem to make my child upset.

    a. Clear meaning

    b. Somewhat clear

    c. Need more information to understand meaning

    d. Did not understand item

    e. Comments_____
    _____
    _____

10) My child stays away from places that bring up upsetting memories.

    a. Clear meaning

    b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

11) My child stays away from activities that remind him/her of upsetting things.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

12) My child is afraid of adults.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

13) My child does not talk about things that scared him/her.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

14) My child tries not to hear or talk about violence.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

15) My child seems fearful or worried.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

16) It seems like my child feels guilt or shame.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

f.

17) My child likes to play by himself/herself rather than with other children.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

18) My child is less social than other children his/her age.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

19) My child keeps to himself/herself.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

20) My child explores his/her environment less than he/she used to.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

21) My child says he/she is bad.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

22) My child says things like people are bad or the world is a bad place.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

23) My child is less happy than he/she used to be.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

24) My child talks less than he/she used to.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

25) My child is shy.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

26) My child cries without a good reason.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

27) When there does not seem to be a reason, my child has angry outbursts or temper tantrums.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

28) My child harms himself/herself.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

29) My child is very aware of his/her surroundings.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

30) My child looks around his/her environment for people or things that might be dangerous.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

31) My child wakes up often at night.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

32) My child has a hard time falling asleep.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

33) Loud or unusual noises startle my child easily.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

34) My child is irritable or cranky.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

35) My child has a hard time sitting still.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

36) My child seems restless or hyper.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

37) My child scares easily.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

38) It is hard for my child to focus or concentrate.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

39) My child acts whiny.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

40) My child has a difficult time calming down when he/she gets upset.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

41) My child has tantrums more so than other children his/her age.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

42) My child's tantrums last longer than most children his/her age.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

43) My child seems to be more tense and jumpy than other children his/her age.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

44) My child gets upset or angry easily.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

45) My child does not respect people's personal space. For example, he/she touches strangers.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

46) My child has a hard time separating from me

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

47) My child is afraid of being left alone.

a. Clear meaning
b. Somewhat clear
c. Need more information to understand meaning
d. Did not understand item
e. Comments_____
_____
_____

48) My child does not want to sleep alone.

a. Clear meaning
b. Somewhat clear
c. Need more information to understand meaning
d. Did not understand item
e. Comments_____
_____
_____

49) My child looks worried if he/she is not near me.

a. Clear meaning
b. Somewhat clear
c. Need more information to understand meaning
d. Did not understand item
e. Comments_____
_____
_____

50) My child will hug strangers.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

51) My child is clingy.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

52) My child gets upset if I am not near them.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

53) My child hides food.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

54) My child has unusual interest in his/her own or others' private parts.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

55) My child was potty trained, but has started to wet the bed.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

56) My child acts younger than he/she used to (for example, started sucking his/her thumb).

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

57) My child says she/he doesn't feel well when there does not seem to be a medical reason.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

58) It is hard to make my child happy.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

59) My child tells the truth no matter what the situation.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

60) I enjoy spending time with my child.

a. Clear meaning
b. Somewhat clear
c. Need more information to understand meaning
d. Did not understand item
e. Comments_____
_____
_____

61) My child is difficult to be around.

a. Clear meaning
b. Somewhat clear
c. Need more information to understand meaning
d. Did not understand item
e. Comments_____
_____
_____

62) My child has perfect manners.

a. Clear meaning
b. Somewhat clear
c. Need more information to understand meaning
d. Did not understand item
e. Comments_____
_____
_____

63) My child listens to commands the first time they are given.

a. Clear meaning
b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

64) My child has a bad attitude.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

65) I need a break from my child.

a. Clear meaning

b. Somewhat clear

c. Need more information to understand meaning

d. Did not understand item

e. Comments_____
_____
_____

Demographic Form for Parent

1) What is your sex?
( ) Male
( ) Female

3) What is your race/ethnicity?
( ) Asian/Pacific Islander
( ) Black/African-American
( ) Caucasian/Euro-American
( ) Hispanic/Latino/a
( ) Native American/Alaska Native
( ) Other/Multi-Racial

4) Are you the primary caregiver of your child?
( ) Yes
( ) No

5) Age
_____

Thank you for taking the time to provide us with this valuable feedback! We would love to hear general feedback from your group as well so please take time to discuss with one another your thoughts about the screening measure.

Appendix E: Expert Rating Form

Thank you for taking time to provide me with valuable information that will assist in the identification of young children (ages two to six) who are experiencing toxic stress after trauma. **Your feedback is <u>greatly valued</u>**. Thank you for your contribution to this measure!

<u>When rating the questions rate the level of clarity:</u>
1 = did not understand item, 2 = need more information, 3 = somewhat clear, and 4 = clear meaning

<u>Please also rate the relevance of each item:</u>
1 = not at all relevant, 2 = little relevance, 3 = some relevance, 4 = good relevance, 5 = excellent relevance. Excellent item clarity will be operationalized as an item that has a clear meaning, is not double-barreled, and does not use language that is colloquial to the field of psychology.

Highlighted items represent a validity scale intended to measure overly favorable responding. Please rate these items based on both clarity and relevance in assessing overly favorable responding.

<u>Parents will receive the following prompt when filling out this measure:</u>
Instructions: A list of statements is below. Read each statement. Then, think about your child's thoughts, feelings, and behaviors in the last month. Circle the letter **A** for "**ALWAYS OR ALMOST ALWAYS**" if it happens daily. Circle **O** for "**OFTEN"** if it happens weekly. Circle **S** for "**SOMETIMES**" if it happens about twice monthly. Circle **N** for "**NEVER OR ALMOST NEVER**" if it rarely or never happened in the last month. Mark only one letter for each statement.

Demographic Form For Expert

1) What is your sex?
( ) Male
( ) Female

3) What is your race/ethnicity?
( ) Asian/Pacific Islander
( ) Black/African-American
( ) Caucasian/Euro-American
( ) Hispanic/Latino/a
( ) Native American/Alaska Native
( ) Other/Multi-Racial

4) Age
_____

5) Years of experience working with children in the mental health field
_____

6) Years of experience working with children in the mental health field who have experienced trauma
_____

	Clarity (1-4)	Relevance (1-5)
1. Acts out scary or upsetting events when she/he plays.		
2. The same ideas show up over and over in my child's play, like someone getting sick, hurt, or dying.		
3. Has bad dreams or nightmares.		
4. Looks like he/she is in a fog/daze (seems tuned out/spaced out).		
5. Seems to be daydreaming or lost in thought.		
6. Has a strong reaction to reminders of upsetting things.		
7. Has flashbacks to upsetting things. (This may be seen by a sudden change in mood, a blank stare, or shaking).		
8. Talks over and over about an unpleasant event.		
9. Gets upset around certain people.		
10. Stays away from places that bring up upsetting memories.		
11. Stays away from activities that remind him/her of upsetting things.		
12. Is afraid of adults.		
13. Does not talk about things that scared him/her.		
14. Tries not to hear or talk about violence.		
15. Seems fearful or worried.		
16. Feels guilt or shame.		
17. Likes to play by himself/herself rather than with other children.		
18. Is less social than other children his/her age.		
19. Keeps to himself/herself.		
20. Explores his/her environment less than he/she used to.		
21. Says he/she is bad.		
22. Says things like "people are bad" or "the world is a bad place."		
23. Is less happy than he/she used to be.		
24. Talks less than he/she used to.		
25. Is shy.		
26. Cries without a good reason.		
27. When there does not seem to be a reason, my child has angry outbursts or temper tantrums.		
28. Harms himself/herself on purpose.		
29. Is very aware of his/her surroundings.		
30. Looks around his/her environment for people or things that might be dangerous.		
31. Wakes up often at night.		
32. Has a hard time falling asleep.		
33. Startles easily with loud or unusual noises.		
34. Is irritable or cranky.		
35. Has a hard time sitting still.		

36. Seems restless or hyper.		
37. Scares easily.		
38. Has a hard time focusing or concentrating.		
39. Acts whiny.		
40. Has a difficult time calming down when he/she gets upset.		
41. Tantrums more than other children his/her age.		
42. Tantrums last longer than most children his/her age.		
43. Seems to be more tense and jumpy than other children his/her age.		
44. Gets upset or angry easily.		
45. Does not respect people's personal space. For example, he/she touches strangers.		
46. Has a hard time separating from me.		
47. Is afraid of being left alone.		
48. Does not want to sleep alone.		
49. Looks worried if he/she is not near me.		
50. Will hug strangers.		
51. Is clingy.		
52. Gets upset if I am not near him/her.		
53. Hides food.		
54. Has unusual interest in his/her own or others' private body parts.		
55. Was potty trained, but has started to wet the bed.		
56. Acts younger than he/she used to (for example, started sucking his/her thumb).		
57. Says she/he doesn't feel well when there does not seem to be a medical reason.		
58. Is easy to make happy.		
59. Tells the truth.		
60. Is enjoyable/easy to be around.		
61. Has perfect manners.		
62. Listens to commands/directions the first time they are given.		
63. Has a good attitude.		

Thank you again! Please write down any suggestions you have for the items or measure as a whole in the area below.

Appendix F: Modified Item Pool for the Early Childhood Traumatic Stress Screen (ECTSS) based on Parent and Expert Feedback

Instructions: A list of statements is below. Read each statement. Then, think about your child's thoughts, feelings, and behaviors in the last month. Circle the letter **A** for "**ALWAYS OR ALMOST ALWAYS**" if it happens daily. Circle **O** for "**OFTEN"** if it happens weekly. Circle **S** for "**SOMETIMES**" if it happens about twice monthly/every other week. Circle **N** for "**NEVER OR ALMOST NEVER**" if it rarely or never happened in the last month. Mark only one letter for each statement.

	Never	Sometimes	Often	Always or Almost Always
1. Is hard to make happy.	N	S	O	A
2. Will hug strangers.	N	S	O	A
3. Cries without a good reason.	N	S	O	A
4. Gets upset or angry easily.	N	S	O	A
5. Looks like he/she is in a fog/daze (seems tuned out/spaced out).	N	S	O	A
6. Scares easily.	N	S	O	A
7. Is clingy.	N	S	O	A
8. The same ideas show up over and over in my child's play, like someone getting sick, hurt, or dying.	N	S	O	A
9. Startles easily with loud or unusual noises.	N	S	O	A
10. Is afraid of being left alone.	N	S	O	A
11. Lies.	N	S	O	A
12. Keeps to himself/herself.	N	S	O	A
13. Is less social than other children his/her age.	N	S	O	A
14. Has bad dreams or nightmares.	N	S	O	A
15. Tantrums more than other children his/her age.	N	S	O	A
16. Tantrums last longer than most children his/her age.	N	S	O	A
17. Has flashbacks to upsetting things. (This may be seen by a sudden change in mood, a blank stare, or shaking).	N	S	O	A
18. Hides food.	N	S	O	A
19. Acts whiny.	N	S	O	A
20. Is irritable or cranky.	N	S	O	A
21. Talks less than he/she used to.	N	S	O	A
22. Is afraid of adults.	N	S	O	A
23. Is very aware of his/her surroundings.	N	S	O	A

24. Tries not to hear or talk about violence.	N	S	O	A
25. Acts younger than he/she used to (for example, started sucking his/her thumb).	N	S	O	A
26. Is shy.	N	S	O	A
27. Seems restless or hyper.	N	S	O	A
28. Seems to be daydreaming or lost in thought.	N	S	O	A
29. Stays away from places that bring up upsetting memories.	N	S	O	A
30. Stays away from activities that remind him/her of upsetting things.	N	S	O	A
31. When there does not seem to be a reason, my child has angry outbursts or temper tantrums.	N	S	O	A
32. Says things like "people are bad" or "the world is a bad place."	N	S	O	A
33. Looks worried if he/she is not near me.	N	S	O	A
34. Does not want to sleep alone.	N	S	O	A
35. Says he/she is bad.	N	S	O	A
36. Talks over and over about an unpleasant event.	N	S	O	A
37. Looks around his/her environment for people or things that might be dangerous.	N	S	O	A
38. Wakes up during the night.	N	S	O	A
39. Has a hard time falling asleep.	N	S	O	A
40. Does not do what I ask.	N	S	O	A
41. Gets upset if I am not near him/her.	N	S	O	A
42. Has a difficult time calming down when he/she gets upset.	N	S	O	A
43. Has a hard time focusing or concentrating.	N	S	O	A
44. Harms himself/herself on purpose.	N	S	O	A
45. Does not respect people's personal space. For example, he/she touches strangers.	N	S	O	A
46. Is less happy than he/she used to be.	N	S	O	A
47. Seems fearful or worried.	N	S	O	A
48. Has a strong reaction to reminders of upsetting things.	N	S	O	A
49. Acts out scary or upsetting events when she/he plays.	N	S	O	A
50. Does not talk about things that scared him/her.	N	S	O	A
51. Feels guilt or shame.	N	S	O	A
52. Has a bad attitude.	N	S	O	A
53. Was potty trained, but has started to wet the bed.	N	S	O	A

54. Likes to play by himself/herself rather than with other children.	N	S	O	A
55. Explores his/her environment less than he/she used to.	N	S	O	A
56. Has poor manners.	N	S	O	A
57. Seems to be more tense and jumpy than other children his/her age.	N	S	O	A
58. Says she/he doesn't feel well when there does not seem to be a medical reason.	N	S	O	A
59. Has a hard time separating from me.	N	S	O	A
60. Has unusual interest in his/her own or others' private body parts.	N	S	O	A
61. Has a hard time sitting still.	N	S	O	A
62. Gets upset around certain people.	N	S	O	A
63. Is hard to be around.	N	S	O	A

Appendix G: Final Item Pool for the Early Childhood Traumatic Stress Screen (ECTSS)

See page 151-153 for completed measure to be distributed for use to qualified professionals.

ECTSS

Instructions: A list of statements is below. Read each statement. Then, think about your child's thoughts, feelings, and behaviors in the last month. Circle the letter **A** for "**ALWAYS OR ALMOST ALWAYS**" if it happens daily. Circle **O** for "**OFTEN"** if it happens weekly. Circle **S** for "**SOMETIMES**" if it happens about twice monthly/every other week. Circle **N** for "**NEVER OR ALMOST NEVER**" if it rarely or never happened in the last month. Mark only one letter for each statement.

	Never	**Sometimes**	**Often**	**Always or Almost Always**
1. Is hard to make happy.	N	S	O	A
2. Cries without a good reason.	N	S	O	A
3. Gets upset or angry easily.	N	S	O	A
4. Scares easily.	N	S	O	A
5. Is clingy.	N	S	O	A
6. The same ideas show up over and over in my child's play, like someone getting sick, hurt, or dying.	N	S	O	A
7. Startles easily with loud or unusual noises.	N	S	O	A
8. Is afraid of being left alone.	N	S	O	A
9. Lies.	N	S	O	A
10. Has bad dreams or nightmares.	N	S	O	A
11. Tantrums more than other children his/her age.	N	S	O	A
12. Has flashbacks to upsetting things. (This may be seen by a sudden change in mood, a blank stare, or shaking).	N	S	O	A
13. Acts whiny.	N	S	O	A
14. Is irritable or cranky.	N	S	O	A
15. Talks less than he/she used to.	N	S	O	A
16. Is shy.	N	S	O	A
17. Says things like "people are bad" or "the world is a bad place."	N	S	O	A
18. Looks worried if he/she is not near me.	N	S	O	A
19. Talks over and over about an unpleasant event.	N	S	O	A
20. Has a hard time falling asleep.	N	S	O	A
21. Does not do what I ask.	N	S	O	A
22. Has a difficult time calming down when he/she gets upset.	N	S	O	A
23. Harms himself/herself on purpose.	N	S	O	A
24. Seems fearful or worried.	N	S	O	A

25. Has a strong reaction to reminders of upsetting things.	N	S	O	A
26. Does not talk about things that scared him/her.	N	S	O	A
27. Feels guilt or shame.	N	S	O	A
28. Has a bad attitude.	N	S	O	A
29. Explores his/her environment less than he/she used to.	N	S	O	A
30. Has poor manners.	N	S	O	A
31. Says she/he doesn't feel well when there does not seem to be a medical reason.	N	S	O	A
32. Has a hard time separating from me.	N	S	O	A
33. Has unusual interest in his/her own or others' private body parts.	N	S	O	A
34. Is hard to be around.	N	S	O	A

Scoring Sheet for ECTSS

6___ 12___ 17___ 19___ 25___ 31___ 33___ Sum = ECTSS-I ____

15___ 16*___ 24___ 26___ 27___ 29___ Sum = ECTSS-AVN ____

2___ 3___ 10___ 11___ 14___ 20___ 22___ 23___ Sum = ECTSS-ARH ____

4___ 5___ 7___ 8___ 16*___ 18___ 32___ Sum = ECTSS - FA____

* Item 16 is scored twice (ECTS-AVN and ECTS-FA)

ECTSS-I ____ +
ECTSS-AVN ____ +
ECTSS-ARH ____ +
ECTSS-FA ____ +
=
ECTSS- TC ____

Optional Response Style subscale:

1___ 9___ 13___ 21___ 28___ 30___ 34___ Sum = ECTSS - RS____

Interpretations for subscales and composite score:

Composite Score	**Cut-off**	**Interpretation**
ECTSS-TC	31	Clinically significant symptoms of traumatic stress.
Optional Subscales		
ECTSS-I	11	Significantly elevated intrusive symptoms such as flashbacks and re-enacting the event in play.
ECTSS-AVN	12	Significantly elevated avoidance of trauma reminders (people, places, situations) and negative alterations in mood and cognition (shame, guilt).
ECTSS-ARH	27	Significantly elevated arousal and hyper-reactivity such as sleep disturbance, frequent tantrums, and exaggerated startle response.
ECTSS - FA	22	Significantly elevated difficulties with attachment such as interpersonal difficulties and difficulty separating from caregiver.
ECTSS - RS	≥ 20 ≤ 8	Overly negative response style and a tendency to amplify symptoms. Interpret results with caution. Overly positive response style and a tendency to minimize symptoms. Interpret results with caution.