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Resilience and Trauma in Maltreated Youth

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RESILIENCE AND TRAUMA IN MALTREATED YOUTH

By

Timothy Landan Day

Bachelor of Arts in Psychology
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May 2013

ABSTRACT

Resilience and Trauma in Maltreated Youth

By

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Research into resilience represents a theoretical shift from the medical model in contemporary psychology to a focus on adaptation (Poulou, 2007). The relationship however between resilience and the development and PTSD in children remains unclear. The purpose of this present study is to expand on this research by investigating resilience and adaptability with respect to Posttraumatic Stress Disorder (PTSD) symptoms across maltreated youth of different ethnicities at risk for PTSD. Participants will be recruited from a Department of Family Services (DFS)-affiliated clinic in the Las Vegas area and administered the Children's PTSD Inventory (CPTSD-I), Behavior Assessment System for Children-2 Parent Rating Scales (BASC-2 PRS), and Resiliency Scale for Children and Adolescents (RSCA). Multiple regression will be used to analyze the relationship between specific PTSD symptoms, ethnicity, and BASC-2 PRS and RSCA Resiliency Subscales. Implications will be discussed.

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CHAPTER 1

INTRODUCTION

Resilience research represents a theoretical shift from the medical model in contemporary psychology to a focus on adaptation (Poulou, 2007). Werner (1995) defined resilience as an ability to surpass the harmful effects of trauma and to remain adaptive. Other definitions include post-traumatic growth and openness to change at little psychological cost (Gillespie, Chaboyer, Wallis, & Grimbeek, 2007; Richardson, 2002). Researchers often employ a transactional model of resilience and an emphasis on protective factors regarding trauma (Kumpfer & Bluth, 2004).

One's ability to adapt to trauma is thus a salient prerequisite for resilience development. Adaptability refers to a child's ability to successfully adjust to changes in the environment, reconfigure one's perspective and mental resources as needed, and maintain a sense of balance across multiple life domains (Kashdan & Rottenberg, 2010). Inability to adapt is correlated with depression and anxiety and may interfere with balance across personal and social domains (Kashdan & Rottenberg, 2010; Quota, El-Sarraj, Punamäki, 2001). Unfortunately, few researchers have focused on children's resilience following maltreatment trauma.

This study examined resilience in maltreated youth at risk for posttraumatic stress disorder (PTSD). Child maltreatment affects many youth; approximately 3.3 million suspected cases of maltreatment occurred in 2008 (Administration on Children, Youth, and Families, 2010). Exposure to early childhood trauma significantly increases risk for negative physiological and psychological effects, including the development of PTSD (Clark, Thatcher, & Martin, 2010; Famularo et al., 1994; Perry, 2008). Resilience (via the

Resiliency Scale for Children and Adolescents) and PTSD symptoms were examined in a large and diverse sample of maltreated youth. In addition, components of resilience as defined by the Adaptability Subscales on the Behavioral Assessment System for Children Parent Rating Scale (BASC-2 PRS) were examined with respect to total number of PTSD symptoms. The relationship between components of resilience and PTSD symptoms was also expected to differ by ethnicity.

Resilience in maltreated youth can be related to individual-, family-, and community-level factors (Afifi & MacMillan, 2011). Individual-level factors may include personality variables such as self-esteem, cognitive ability, and social skills. Family-level factors may include stable home environments, parental relationships, and spousal support. Community-level factors include neighborhood and school support and religious affiliation (Afifi & MacMillan, 2011).

The ability to remain resilient despite trauma ranges from 11-33% in maltreated youth (Cicchetti, & Rogosch, 1997; DuMont, Widom, & Czaja, 2007). Estimates of resilience are difficult to interpret because of definitional uncertainty, variations in measurement tools, small sample sizes, and little accountability for age, gender, and ethnicity. Females may have slightly increased rates of resilience than males during adolescence but results are mixed (DuMont, Widom, & Czaja, 2007). The number and nature of particular traumas may also influence resilience. For example, multiple traumas may reduce a youth's resiliency (Cloitre et al. 2009). Additional studies are needed to determine the relationship between variations in child maltreatment (e.g., neglect, physical, sexual, and emotional maltreatment) and resilience.

Research into child maltreatment and resilience contains several limitations. First, resilience research remains sparse in the child maltreatment literature because

researchers have focused primarily on demographics, epidemiology, and pathology. Additionally, small sample sizes and variations in the type and duration of trauma limit the generalizability of research to other maltreatment populations. The influence of trauma-specific factors on psychopathology, such as the perpetrator of the maltreatment or the trauma duration and intensity, remains unclear. Future research should examine youth's general resilience while accounting for unique variations in the nature of the trauma.

Third, ethnicity has not been adequately considered when examining resilience. Resilience research in maltreated populations is composed primarily of studies involving European Americans. This is unfortunate given that ethnic minority status, cultural attitudes towards particular ethnic groups, and other ecological variables such as immigration and socioeconomic status may significantly influence a child's ability to adapt to stressors (Holleran & Jung, 2008; Jones, 2007; Yeh, Kim, Pituc, & Atkins, 2008). Culturally salient features such as family structure, religion, and attitudes may also influence resilience (Flores, Cicchetti, & Rogosch, 2005; Jones, 2007, Yeh et al, 2008). The aims of this study were to examine (1) resilience and adaptability with respect to PTSD symptoms in a large and diverse sample of maltreated youth, (2) resilience, adaptability and PTSD symptoms across multiple ethnic groups, and (3) individual components of resilience in this population.

An overview of key findings in maltreatment and PTSD is provided next in Chapter 2. Definitions of child maltreatment, prevalence, and significant effects are reviewed. Current research regarding epidemiology, symptoms of PTSD, comorbidity, and key protective factors in maltreated youth is summarized. The literature review will conclude with an overview of empirically-supported adaptive factors in maltreated youth

and a review of resilience and adaptability as they relate to child maltreatment and PTSD.
Procedures and measures are then outlined in the method section.

CHAPTER 2

LITERATURE REVIEW

Child Maltreatment: Definitions

The introduction of the Federal Child Abuse Prevention and Treatment Act in 1974 was a significant step toward recognizing the negative effects of childhood maltreatment in the United States. Child maltreatment was defined as “(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” (U.S. Department of Health and Human Services, 2005). The American Psychological Association Committee on Professional Practice and Standards further defined maltreatment as “actions that are abusive, neglectful, or otherwise threatening to a child’s welfare” (American Psychological Association Committee on Professional Practice and Standards, 1999, p. 591). Child maltreatment often consists of physical, sexual, and emotional maltreatment, as well as neglect. These maltreatment types often overlap. For example, a high correlation exists between physical and emotional maltreatment (Bolger & Patterson, 2001).

Physical maltreatment refers to “suffering by a child, or substantial risk that a child will imminently suffer, a physical harm, inflicted non-accidentally on him or her by his or her parents or caretaker” (American Psychological Association Committee on Professional Practice and Standards, 1999, p. 591). Sexual maltreatment refers to “contacts between a child and an adult or other person significantly older or in a position of power or control over the child, where the child is being used for sexual stimulation of

the adult or other person” (American Psychological Association Committee on Professional Practice and Standards, 1999, p. 591).

Emotional maltreatment refers to “a repeated pattern of behavior that conveys to children that they are worthless, unwanted, or only of value in meeting another’s needs” [and] may include serious threats of physical or psychological violence” (American Psychological Association Committee on Professional Practice and Standards, 1999, p. 591). Emotional maltreatment may include a parent who spurns, isolates, exploits a child, or denies emotional care (Sternberg et al., 2004). Emotional maltreatment significantly impacts the degree to which other forms of maltreatment cause adverse consequences (Hamarman, Pope, & Czaja, 2002).

Neglect refers to “an act of omission, specifically the failure of a parent or other person legally responsible for a child’s welfare to provide for the child’s basic needs and proper level of care with respect to food, shelter, hygiene, medical attention or supervision” (p. 591). Emotional neglect refers to “the passive or passive-aggressive inattention to a child’s emotional needs, nurturing, or emotional well-being (American Psychological Association Committee on Professional Practice and Standards, 1999, p. 591). Physical neglect refers to

“a child suffering or in substantial risk of imminently suffering, physical harm causing disfigurement, impairment of bodily functioning, or other serious physical injury as a result of conditions created by a parent or other person legally responsible for the child’s welfare or by the failure of a parent or person legally responsible for the child’s welfare to adequately supervise or protect him or her” (American Psychological Association Committee on Professional Practice and Standards, 1999, p. 591).

Prevalence

The Administration on Children, Youth and Families (ACYF, 2010) reported 3.3 million suspected incidents of child maltreatment in the United States in 2008. Child Protective Services (CPS) agencies found 24% of these reports to be authentic (ACYF, 2010). In 2008, 772,000 children were victims of child maltreatment, a 1% victimization rate in the U.S. population (ACYF, 2010). Cases of child maltreatment in 2008 consisted of neglect (71.1%), physical maltreatment (16.1%), sexual maltreatment (9.1%), psychological maltreatment (7.3%), medical neglect (2.2%), and “other” maltreatment (9.0%) (ACYF, 2010). These rates may involve cases reported to Child Protective Services or other authorities and reflect only a portion of the true prevalence of child maltreatment (Cicchetti & Toth, 2005). Additionally, an estimated 1,740 children die due to child maltreatment, a number that increases each year (ACYF, 2010). Fatalities include children aged less than 1 year (45.3%), 1 year (15.7%), 2 years (11.2%), 3 years (7.6%), 4-7 years (10.1%), and 8-17 years (9.6%) (0.4% unknown) (ACYF, 2010).

Prevalence by gender. Female children (51.3%) comprise more reported child maltreatment cases than males (48.3%) (0.4% unknown) (ACYF, 2010). In addition, 20-27% of women and 5-16% of men report an incident of sexual maltreatment as a child (Finkelhor, Hotaling, Lewis, & Smith, 1990; Finkelhor, 1994). Other maltreatment types differ little as a function of gender (Azar & Wolfe, 2006). Males report lower rates of maltreatment than females with age (ACYF, 2010).

Prevalence by age. The United States Department of Health and Human Services reported maltreatment rates for children aged 0-1 year (24.4/1000), 1-3 years (14.2/1000), and 4-7 years (13.5/1000). The ACYF reported that 32.6% of maltreated children were under age 4 years (ACYF, 2010). Children aged 4-7 years also accounted for 23.6% of

substantiated child maltreatment cases and children aged 8-11 years accounted for 18.9% of such cases (ACYF, 2010).

Prevalence by ethnicity. The ACYF reported that maltreated youths were largely European American (45.1%), African American (21.9%), and Hispanic (20.8%) (ACYF, 2010). Victimization rates differ among African American (16.6/1000), Alaska Native (13.8/1000), American Indian (13.9/1000), Asian (2.4/1000), European American (8.6/1000) and Hispanic (9.8/1000) children (ACYF, 2010). Rates of maltreatment among ethnicities may also vary across maltreatment type. Ullman and Filipas (2005) found that African American college students reported significantly higher rates of sexual maltreatment than Asian, Hispanic, or European American students.

Economic factors. Material hardship and infrequent employment are predictive of child neglect (Slack, Holl, McDaniel, Yoo, & Bolger, 2004). Parental job status may also contribute to child maltreatment risk. Rates of child maltreatment increase during periods of high unemployment (Steinberg, Catalano, & Dooley, 1981). Sidebotham and Heron (2006) suggested that maternal employment may lead to a reduced risk of parents being investigated for child maltreatment. Finklehor and Jones (2006) reported that economic prosperity is associated with less child maltreatment.

Maltreatment Effects

Maltreatment in children can have a broad range of negative outcomes. The severity and length of maltreatment may also influence these outcomes. Chronic maltreatment increases risk for behavioral and emotional symptoms (Éthier, Lemelin, & Lacharite, 2004). The following section summarizes the effects of child maltreatment.

Physiological effects. Child maltreatment has serious and devastating physical consequences. Maltreated children demonstrate increased need for hospital care and

medical treatment (Lanier, Jonson-Reid, Stahlschmidt, Drake, & Constantino, 2010). Adolescent and young adult victims of maltreatment have general health complaints, compromised immune systems and stress responses, and an increased body mass index (Clark, Thatcher, & Martin, 2010). Other health complaints associated with maltreatment include irritable bowel syndrome, pain and pain disorders, cardiopulmonary symptoms (e.g., chest pain, irregular heartbeat), obesity, and gynecological health problems such as chronic pelvic pain (Irish, Kobayashi, & Delahanty, 2010).

Child maltreatment increases risk for abnormalities in brain processes and structure (De Bellis et al., 1999). Delays and irregularities in brain development can occur in traumatized youth. Childhood represents a critical period of development that requires a healthy environment for optimal brain growth. Deprivation of this environment may lead to dysfunctional brain development (Twardosz & Lutzker, 2010). Maltreated children may present with decreased neuronal growth, smaller overall cerebral volumes, cortical atrophy, enlarged ventricles, and small head size (Carrion, Haas, Garrett, Song, & Resiss, 2010; De Bellis et al., 1999; Perry, 2002).

Exposure to extreme stress associated with maltreatment disrupts the neuroendocrine and sympathetic nervous systems and may result in dysregulation of neurotransmitters and hormones (De Bellis et al., 1999; Kaufman & Charney, 2001; Shonkoff, Boyce, & McEwen, 2009; van der Kolk, 1996). During maltreatment, serotonin, dopamine, and norepinephrine are secreted in response to stress (Watts-English, Fortson, Gibler, Hooper, & De Bellis, 2006). Maltreated youths display higher levels of cortisol, norepinephrine, dopamine, and sympathetic nervous system activation than non-maltreated youths and anxious children (De Bellis et al., 1999). Furthermore, future reminders of the experienced trauma result in reactivation of stress-related

neurobiological systems, which in turn overstimulates the catecholamine system (Watts-English et al., 2006). Such overactivation of the catecholamine system may result in delayed brain development and maturation (Watts-English et al., 2006).

The neuroendocrine stress-response system, and especially the hypothalamic-pituitary-adrenal (HPA) axis, is a particular focus in child maltreatment (Cicchetti, Rogosch, Howe, & Toth, 2010). The HPA axis activates with the sympathetic nervous system in response to stress (López, Akil, & Watson, 1999). Released norepinephrine stimulates the amygdala which stimulates the hypothalamus. The hypothalamus stimulates the pituitary gland to release adrenocorticotrophic hormone. Adrenocorticotrophic hormone then stimulates the release of cortisol. Cortisol release restricts additional stress-related biological reactions from activating (Watts-English, Fortson, Gibler, Hooper, & De Bellis, 2006).

Children exposed to ongoing stress may present with chronic hyperactivity and disruption of the HPA axis (van Voorhees, & Scarpa, 2004). Chronic hyperactivity in the HPA axis is associated with increased exposure to glucocorticoids, hippocampal atrophy, cognitive impairment, and problems in visual episodic and declarative memory (Cicchetti et al., 2010; Tarullo & Gunnar, 2006). HPA axis disruption is associated with anxiety, depression, learning and memory deficits, failure in response inhibition, and mood and behavior alterations and may lead to a blunted stress-response system (van Voorhees & Scarpa, 2004).

Disruption in the HPA axis may increase risk for cortisol dysregulation, though cortisol levels and the long-term effects of cortisol release in maltreated children remain unclear (Alink, Cicchetti, Kim, & Rogosch, 2012). Cortisol dysregulation increases risk for social functioning problems and psychopathology (Alink et al., 2012). Cortisol may

also link early maltreatment to the development of future anxiety disorders (van der Vegt, van der Ende, Huizink, Verhulst, & Tiemeier, 2010). Some adults maltreated as children display diminished cortisol response and increased risk for anxiety and mood disorders (Carpenter et al., 2007).

Psychological effects. Child maltreatment increases risk for anxiety disorders, depression, personality disorders, and emotional regulation problems. Memory of maltreatment may also lead to psychopathology (Scott, Smith, & Ellis, 2010). Early life trauma also significantly increases risk for future psychological disorders (Perry, 2008). People who experienced physical maltreatment have a higher lifetime prevalence of anxiety disorders than those who did not (MacMillan et al., 2001). Child maltreatment most strongly correlates with PTSD (Burns, Jackson, & Harding, 2010; Scott, Smith, & Ellis, 2010). Heightened risk also occurs for the development of generalized anxiety disorder (Yamamoto et al., 1999).

Child maltreatment also correlates strongly with mood disorders. Physically maltreated women report increased rates of major depression (MacMillan et al., 2001). Individuals with a history of physical or sexual maltreatment report an increased prevalence of major depressive disorder and impaired social functioning (Mancini, Ameringen, & MacMillan, 1995). Additionally, an interaction between child maltreatment and the serotonin transporter gene (5-HTT) may lead to increased depressive symptoms (Cicchetti, Rogosch, & Sturge-Apple, 2007).

Child maltreatment may also increase risk for personality disorders (Kim, Cicchetti, Rogosch, & Manly, 2009). Maltreatment interacts with the monoamine oxidase A (MAOA) gene to increase vulnerability to symptoms of antisocial personality disorder (Beach et al., 2010). Others suggest links between child maltreatment and

borderline and paranoid personality disorders (Gratz, Tull, Baruch, Bornovalova, & Lejuez, 2008; Natsuaki, Cicchetti, & Rogosch, 2009). Childhood maltreatment may also be a significant risk factor for schizoid and narcissistic personality disorder (Kasen et al., 2001).

Child maltreatment also impacts emotional regulation. Emotion regulation refers to a process enabling people to identify, verbalize, and communicate emotion in an adaptive manner (Ford, 2005). Maltreated children demonstrate difficulty regulating and differentiating emotional states (Cicchetti, Ganiban, & Barnett, 1991, Kim & Cicchetti, 2010). Difficulties in regulation may include attenuated empathy or constricted emotions as well as inappropriate emotional reactivity (Kim & Cicchetti, 2010). Other regulation difficulties may include withdrawn behaviors and internalizing symptoms (Manly, Rogosch, & Cicchetti, 2001).

Psychologically maltreated youth may also demonstrate increased risk for insecure attachments to others (Cicchetti & Toth, 2005; Riggs & Kaminski, 2010). Children with insecure attachment patterns demonstrate maladaptive coping patterns that increase risk for psychopathology (Limke, Showers, & Zeigler-Hill, 2010). Insecure attachment patterns may also continue into adulthood and increase risk for psychological distress and difficulty maintaining healthy romantic relationships (Riggs & Kaminski, 2010). Youth may also demonstrate greater unhealthy sexual behaviors. For example, sexual maltreatment correlates with increased sexual behaviors before age 15 years and with prostitution during young adulthood (Wilson & Widom, 2008).

Maltreated youth exhibit greater externalizing behaviors than non-maltreated children (Edmond, Auslander, Elze, McMillen, & Thompson, 2002). Maltreated youth report greater levels of aggressive behavior (Bolger & Patterson, 2001; Vandenberg &

March, 2009). Youth who had been physically maltreated reported increased stealing, and neglected children demonstrated less rule-compatible behaviors and more school-related cheating (Koenig, Cicchetti, & Rogosch, 2004). Aggressive behaviors may continue into adulthood, and maltreatment may increase risk for abuse perpetration (Bromberg & Johnson, 2001).

Youth with at least one type of child maltreatment are 1.5-3 times more likely than non-maltreated youth to report alcohol use before age 13 years (Hamburger, Leeb, & Swahn, 2008). Sexually maltreated male children may present with greater alcohol use as an adult than non-maltreated males (Hamburger, Leeb, & Swahn, 2008). Similarly, MacMillan and colleagues (2001) reported that victims of physical maltreatment had increased rates of alcohol and drug abuse and dependency. Child maltreatment also correlates with increased cigarette use (Topitzes, Mersky, & Reynolds, 2010).

Posttraumatic Stress Disorder (PTSD). Maltreated youth demonstrate increased vulnerability to PTSD (Famularo et al., 1994). Characteristics of the maltreatment, such as severity of the abuse, victims' relationship to the perpetrator, and the use of force, may intensify PTSD risk (Tyler, 2002). Other risk factors may include race, parental educational level, and low parental warmth (Roberts, Gilman, Breslau, Breslau, & Koenen, 2011; Sidebotham & Heron, 2006; Slack, Holl, McDaniel, Yoo, & Bolger, 2004). Early childhood maltreatment and PTSD may further increase risk for long-term effects such as adult trauma symptoms, increased startle activity, behavior problems, and adult psychopathology (Borger, Cox, & Asmundson, 2005; Jovanovic et al., 2009; Shen, 2009).

Limitations in Research on Maltreatment Effects.

Methodological difficulties limit the generalizability and applicability of child

maltreatment studies. Many studies of physical health outcomes remain limited due to use of observational, correlational, retrospective, and uncontrolled methods (Noll & Schenk, 2010). In addition, many researchers have not addressed interpersonal characteristics and environmental factors that may decrease risk of psychopathology following maltreatment. Researchers sometimes neglect variables that may relate to positive adaptation and may explain why some children overcome harmful effects of maltreatment.

PTSD remains a significant negative effect of maltreatment but little research has involved variables that buffer against the adverse effects of maltreatment. Few studies examine factors that moderate the relationship between maltreatment and resilience, for example, and even fewer consider individual characteristics of the trauma victim and the nature of the trauma experienced. The following sections review the literature on PTSD in maltreated and other children as well as protective factors such as resilience.

Posttraumatic Stress Disorder (PTSD)

PTSD Criteria

Posttraumatic stress disorder (PTSD) is an anxiety disorder that results from exposure to a traumatic life event or stressor (American Psychiatric Association, 2000). PTSD may be warranted when a traumatic event or stressor involves a direct personal experience and includes a threat of death, serious injury, or a threat to one's physical integrity (APA, 2000). A diagnosis of PTSD may also be given if a traumatic event or stressor involves death, injury, or threat to the physical integrity of another person; or learning about the sudden or violent death, harm, or the threat of death or injury endured by a close affiliate or family member (APA, 2000). A person must respond to a traumatic event with intense fear, helplessness, or horror, or as disorganized or agitated behavior in

children, to warrant a diagnosis (APA, 2000).

Symptoms of PTSD include persistent reexperiencing of the traumatic event, avoiding stimuli related to the trauma, numbing of general responsiveness, and persistent symptoms of arousal (APA, 2000). Reexperiencing the traumatic event occurs via distressing thoughts, perceptions, images, dreams, nightmares, flashbacks, and distress in situations resembling the traumatic event. Symptoms of avoidance and numbing may involve avoiding thoughts, feelings, activities, people, and places associated with or that resemble the trauma. Avoidance is manifested in a loss of interest in certain activities and may include forgetting key aspects of the trauma. Feelings of numbness include detachment or estrangement from others, restricted affect, and sense of a foreshortened future. Symptoms of increased arousal include sleep difficulties, anger, irritability, hypervigilance, increased startle response, and difficulty concentrating. Symptoms must continue for one month to meet diagnostic criteria for PTSD (APA, 2000). Acute PTSD refers to symptoms that last less than 3 months. Chronic PTSD refers to symptoms that persist at least 3 months. Delayed Onset refers to symptoms that appear 6 months after the traumatic event or life stressor (APA, 2000).

Children and adolescents may experience PTSD symptoms differently than adults. Children may re-experience a traumatic event through repetitive play to reenact aspects of the traumatic event, nightmares, or physical symptoms such as stomachaches or headaches (APA, 2000). Children may express intrusive and repetitive thoughts about the trauma, particularly when trying to sleep, and display fears of the dark and wakefulness at night (Yule, 2001). Cognitive difficulties in children with PTSD include inability to remember new information, difficulties concentrating, and increased awareness of environmental dangers (Yule, 2001).

Prevalence of PTSD

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) indicates that the lifetime prevalence for PTSD is 8% among adults, with higher rates among victims of rape, individuals exposed to combat or captivity, and survivors of internment and genocide (APA, 2000). Others suggest an overall lifetime PTSD prevalence rate of 6.8% (Kessler et al., 2005). Prevalence of PTSD may also vary by the nature of the trauma (Sauter & Franklin, 1998). Rates vary by war-related trauma (8.5-19.3%), natural disasters (8-38%), maltreatment (10%-35%), and violent crime (14-31%) (Hirschel & Schulenberg, 2009; Johansen, Wahl, Eilertsen, & Weisaeth, 2007; Kessler et al., 1995; Magruder & Yeager, 2009; Mashu & Ahmed, 2007).

Prevalence rates in children. Few studies are available regarding prevalence rates of PTSD in children and adolescents (Costello, Egger, & Angold, 2005; Kilpatrick et al., 2003). A lifetime prevalence of PTSD in children is reported to be 10% (Kessler et al., 1995). A 6-month prevalence of PTSD in adolescents aged 12-17 was 6.3% for females and 3.7% for males (Kilpatrick et al., 2003). Approximately 25-67.8% of youth have experienced at least one traumatic event before age 16 years, with 0.4% meeting diagnostic criteria for PTSD and 2.2% having symptoms of subclinical PTSD (Copeland, Keeler, Angold, & Costello, 2007; Costello, Erkanli, Fairbank, & Angold, 2002). Adolescent PTSD rates increase with age, with 13-14 year olds (3.7%) having less prevalence than 15-16 year olds (5.1%) and 17-18 year olds (7.0%) (Merikangas et al., 2010).

Prevalence rates in children by type of trauma. PTSD prevalence varies by type of trauma (Luthra et al., 2009; Sauter & Franklin, 1998; Schnurr, Friedman, & Bernardy, 2002). Child and adolescent PTSD rates vary for war-related trauma (27-33%), violent

crime (27-33%), sexual maltreatment (0-90%), and natural disasters (0-18%) (Bokszczanin, 2007; Salmon & Bryant, 2002). Youths aged 8-17 years exposed to sexual or physical maltreatment report the most significant traumatic symptoms (Luthra et al., 2009). Exposure to intimate partner violence also accounts for high prevalence of PTSD in children and adolescents (Carpenter & Stacks, 2009).

Age differences in PTSD. PTSD manifests differently in children of various ages (Dyregrov & Yule, 2006). Younger children express PTSD symptoms nonverbally based on their limited language development (Cook-Cottone, 2004). This may suppress a diagnosis of PTSD in younger children (Cook-Cottone, 2004; Scheeringa, Peebles, Cook, & Zeanah, 2001). Preschool children display antisocial behaviors, aggression, and regressive and destructive behavior, whereas school-aged children have reactions more similar to that of adults, such as symptoms of dissociation, avoidance, and reexperiencing (Dyregrov & Yule, 2006). This difference originates from increased development and a deeper understanding of the traumatic situation (Dyregrov & Yule, 2006; Yule, 2001). Increased brain development in adolescent victims allows for more easily processed traumatic experiences (Cohen et al., 2000; Cook-Cottone, 2004; Terr et al., 1999). Adolescents may have increased awareness of social implications regarding the trauma as well as a sense of a foreshortened future compared to younger children (Dyregrov & Yule, 2006).

Theoretical Models of Posttraumatic Stress Disorder

Multiple theoretical models exist to explain PTSD. These include biological, cognitive and information-processing, and ecological models (Dalglish, 2004; McKeever & Huff, 2003). A multidimensional biopsychosocial model that incorporates variations of these models may best explain the etiology of PTSD (Levine & Mantell,

2007; Paris, 2000; Shalev, 1997). These models are summarized next.

Biological Models

The diathesis-stress model of mental health provides a model for the interaction between stressors and premorbid risk factors, or diatheses, that give rise to a disorder (McKeever & Huff, 2003). A number of biological correlates interact as premorbid risk factors for the onset and maintenance of PTSD (Flouri, 2005). As the number of risk factors increases, the severity of the stressor required to induce symptoms of PTSD decreases (McKeever & Huff, 2003).

Chemical changes are risk factors and contributors to symptoms of PTSD. Dopamine abnormalities and the 9-allele dopamine transporter may contribute to symptoms of PTSD, particularly symptoms of arousal (Druiv, Theall, Keets, & Scheeringa, 2009). High levels of catecholamines and stress hormones also play a significant role in PTSD symptoms (Hawk, Dougall, Ursano, & Baum, 2000; Pervanidou, 2008). A significant amount of the variance in acute PTSD symptoms in children can be accounted for by epinephrine and cortisol levels immediately following a trauma (Delahanty, Nugent, Christopher, & Walsh, 2005). Similarly, veterans with PTSD demonstrate increased plasma cortisol and have exaggerated responses of epinephrine and norepinephrine when exposed to combat stimuli (Liberzon, Abelson, Flagel, & Raz, 1999).

Abnormalities in brain functioning, and changes in brain structure and volume, are noted in individuals with PTSD (Nemeroff et al., 2006). Alterations in the hypothalamic-pituitary-adrenal (HPA) axis often relate to the onset of PTSD (Santa Ana et al., 2006; Shea, Walsh, MacMillan, & Steiner, 2005). Shin and colleagues (2005) identified diminished response in the prefrontal cortex and exaggerated amygdala

responsivity in individuals with PTSD when viewing non-trauma related stimuli. In addition, hippocampal function is impaired in individuals with PTSD, and hippocampal volume may be decreased (Nemeroff et al., 2006). The cause-and-effect relationships between changes in the hippocampus and PTSD remain unclear (Jatzko et al., 2006). Hippocampal changes are well-documented in adults, but evidence of significant hippocampal changes in children is rare (Villarreal & King, 2004).

Early childhood trauma also correlates with sensitivity to future stressors, neuroendocrine alterations, and risk for PTSD (Kloet & Rinne, 2007). Children have increased risk for neurobiological and neuropsychiatric changes following trauma due to increased brain plasticity and ongoing brain development (Gazzaniga, Ivry, & Mangun, 1998, McKeever & Huff, 2003; Perry, Pollard, Blakley, Baker, & Vigilante, 1995).

Genetics are also linked to PTSD. Genetic factors may influence exposure to potentially traumatic events (Amstadter et al., 2009; Burt, 2008). Genetics may also account for some PTSD vulnerability (Amstadter et al., 2009). Approximately 13-30% of the variance in reexperiencing symptoms could be attributed to genetic differences in monozygotic and dizygotic twins exposed to war trauma (True, Rice, Eisen, & Heath, 1993). A review of multiple pre-trauma vulnerability factors reveals that diminished hippocampal volume, neurological soft signs, and presence of abnormal cavum septum pellucidum are present in twins with PTSD (Pitman et al., 2006). Genetic contributions to PTSD may also overlap with genetic contributions to other disorders, increasing risk for comorbid symptoms (Amstadter, Nugent, & Koenen, 2009). The genetic influences for depression account for a significant amount of the genetic variance in PTSD (Fu et al. 2007; Koenen et al., 2008).

Specific genes may also determine overall risk for PTSD. The serotonin

transporter gene (SLC6A4), glucocorticoid receptor (GCCR) polymorphisms, dopamine transporter gene (DAT1), dopamine receptor D2 (DRD2) gene, and the D2A1 allele are implicated in the development of PTSD (Bachmann et al., 2005; Comings, Muhleman, & Gysin, 1996; Kilpatrick et al., 2007; Segman et al., 2002; Young et al., 2002). Little research, however, is available regarding the role that genetics play in the onset and maintenance of PTSD in youth (Dyregrov & Yule, 2006).

Cognitive and Information-Processing Models

PTSD is characterized by many cognitive symptoms, so cognitive and information-processing models of the disorder have received much attention (Buckley, Blanchard, & Neill, 2000). These models of PTSD are grounded in the principle that key cognitive information involves schemas, propositional representations, distributed networks, and pictorial and image representations (Chemtob, Roitblat, Hamada, Carlson, & Twentyman, 1988; Dalgleish, 2004). Individual models include schema-based, associative network, dual representation, and emotion processing theories (Brewin, 1989; Brewin & Holmes, 2003; Dalgleish, 2004; Foa, Steketee, & Rothbaum, 1989). Multi-representational theories combine these models and are a prominent explanation for PTSD etiology (Dalgleish, 2004). Several of these theories have been applied to adult PTSD (Brewin, 2001; Dalgleish, 2004; Lawson, 1995) but few have applied these models to children (Salmon & Bryant, 2002). Ehlers and Clark (2000) suggested a cognitive model specifically focused on PTSD in youth.

Ehlers and Clark's (2000) model suggests that negative appraisals, maladaptive behavioral and cognitive coping strategies, and poor elaboration and incorporation of the traumatic memory increase risk for PTSD. Negative appraisals include those about the trauma itself, events preceding or surrounding the trauma, and the victim's emotional

responses during and following the trauma (Ehler & Clark, 2000). Negative appraisals may extend to situations outside of the traumatic experience and may lead to maladaptive coping strategies such as selective attention, avoidance, rumination, and misinterpreting events and people's reactions (Ehler & Clark, 2000). Negative appraisals exacerbate and maintain PTSD symptoms and interact with negative life events to exacerbate avoidance and numbing symptoms (Ehler & Clark, 2000; Elwood, Mott, Williams, Lohr, & Schroeder, 2009). These appraisals enhance negative emotions such as anxiety and depression and may result in a feeling of having "permanently changed" (Ehler & Clark, 2000, Terranova, Boxer, & Reynolds 2009). Feelings of permanent change lead to additional maladaptive coping strategies and increase the severity of trauma symptoms (Ehler & Clark, 2000).

Poor elaboration and incorporation of the trauma into autobiographical memory further exacerbates symptoms (Ehlers & Clark 2000). Poor encoding may result in increased difficulties recalling information surrounding the trauma and a tendency to generalize cues and events similar to the trauma. Stimuli that occurred during the time of the trauma, such as a loud noise, are associated with danger and continue to be associated with danger in future similar occurrences (Ehlers & Clark, 2000).

Ecological Models

Ecological or transactional views do not identify single risk or protective factors for PTSD but instead emphasize complex interactions of child and family factors (Fletcher, 2003, Silva et al., 2000). For example, PTSD levels vary as a function of familial conflict, little parental support, and parental over-protectiveness in natural disaster victims (Bokszczanin, 2008). Other risk factors include poor family functioning, parental divorce, and large family size (Afifi, Bowman, & Sareen, 2009; Alderfer,

Navsaria, & Kazak, 2009; Birmes et al., 2009). Additionally, trauma that threatens the integrity of a family is a significant risk factor for PTSD (Silva et al., 2000).

Fletcher (2003) proposed a broad ecological view in his working model of PTSD. This model incorporates biological and cognitive risk factors of PTSD as well as characteristics of the family, individual, and social network (Fletcher, 2003). This model examines unique differences in the nature of the trauma itself and identifies corresponding symptoms and the severity of these symptoms unique to each type of trauma (Fletcher, 2003). Interactions of specific ecological variables result in a formulaic approach to the development of PTSD such that, as risk factors increase, the risk of PTSD increases. Conversely, ecological models such as this one introduce the possibility for resilience and adaptability following trauma that may reduce PTSD symptoms. A review of primary resilience factors is discussed following a review of the child maltreatment and PTSD literature.

Child Maltreatment and PTSD

Prevalence

Approximately 46-66% of sexually abused youth meet criteria for significant psychological impairment, including PTSD (Putman, 2009). Approximately 27-50% of youth exposed to physical abuse and 30.6% exposed to neglect meet PTSD criteria (Ackerman, Newton, McPherson, Jones, & Dykman, 1998; Widom, 1999). Emotional abuse also correlates with PTSD symptom severity (Sullivan, Fehon, Andres-Hyman, Lipschitz, & Grilo, 2006). Exposure to indirect interpersonal violence in the home, such as domestic violence, also increases risk for PTSD (Margolin & Vickerman, 2011). Approximately 13% of children exposed to domestic violence meet criteria for PTSD and 50% report trauma symptoms (Rossman & Ho, 2000).

Males have increased risk for exposure to a traumatic event, though females are 50% more likely to develop PTSD (Davis & Siegel, 2000). Females also endorse greater sexual trauma, whereas males report more physical assaults, witnessing the death of a loved one, and involvement in accidents (Putman, 2009; Reebye, Moretti, Wiebe, & Lessard, 2000). Age also correlates with overall risk for PTSD. Youths exposed to trauma before age 11 years demonstrate significantly increased risk for PTSD (Davidson & Smith, 1990).

Other factors outside of the primary trauma also correlate with PTSD. Among homeless youth, 80% reportedly experienced a traumatic event and 25% of males and 60% of females exhibited PTSD symptoms (Gwadz, Nish, Leonard, & Strauss, 2007). Other risk factors include teenage pregnancy, pervasive and long-term poverty, and limited psychological resources (Fairbank, Putnam, & Harris, 2007).

Symptomatology and Outcome

Victims of sexual and physical maltreatment demonstrate the highest rate of PTSD symptoms (Copeland, Keeler, Angold, & Costello, 2007). Youths exposed to multiple trauma experiences may also have increased risk for lasting trauma symptoms and future behavior problems (Shen, 2009). PTSD in maltreated youth is associated with multiple behavior problems such as impulsivity, hypersexuality, self-injury, hyperactivity, attention difficulties, social deficits, and cognitive problems (Diamon, Muller, Rondeau, & Rich, 2001; Putnam, 1998; Schumm, Marshall, Panuzio, & Holtzworth-Munroe, 2008). Additional behavioral symptoms may occur after the initial diagnosis of PTSD. For example, onset of PTSD before age 14 years may increase risk for future interpersonal problems and academic difficulties (Davidson & Smith, 1990).

Few researchers have examined the outcome of PTSD in maltreated youth.

Exposure to childhood trauma may also increase adult trauma symptoms and behaviors (Shen, 2009). One study of severely maltreated youth revealed that 32.7% retained a diagnosis of PTSD 2 years after the initial diagnosis (Famularo, Fenton, Augustyn, & Zuckerman, 1996). Childhood PTSD may also increase risk for adult chronic pain, poor physical and mental health, and future dating violence (Jonson-Reid, Scott, McMillen, & Edmond, 2007; Lang et al., 2008; Raphael & Widom, 2011).

Comorbidity

Children with PTSD have twice as many comorbid diagnoses than other psychiatric inpatient children without PTSD (Lipschitz, Winegar, Hartnick, Foote, & Southwick, 1999). Victims of sexual maltreatment and coercion have increased risk of comorbid disorders over other types of maltreatment (Ackerman, Newton, McPherson, Jones, & Dykman, 1998). Common comorbid diagnoses may include attention deficit hyperactivity disorder and oppositional defiant disorder (Ford et al., 2000). Other comorbid diagnoses may include substance abuse, depression, and suicidal ideation (Borger, Cox, & Asmundson, 2005; Danielson et al., 2009; Macdonald, Danielson, Resnick, Saunders, & Kilpatrick, 2010).

Limitations of Research in Child Maltreatment and PTSD

Individual characteristics related to sexual identity and race and ethnicity, including English language ability, level of acculturation, and ethnic identity in maltreated youth, are unknown (Triffleman & Pole, 2010). Few researchers have examined the interactions between factors specific to a trauma, number of traumas, and exposure to specific risk and protective factors to determine onset of PTSD.

Historically, research into child maltreatment has focused on the negative effects of a given trauma (Walsh, Dawson, & Mattingly, 2010). Researchers have yet to fully

understand why exposure to maltreatment manifests as PTSD in some children but not in others (Teicher, 2010). Resilience may be a key factor in this regard but has not received substantial research attention. This current gap in research may reflect definitional uncertainty and vast variability within resilience measurement (Walsh et al, 2010). Incongruity between child, parental, and teacher reports of resilience following trauma limit the amount of information that can be generalized to other youth (Walsh et al, 2010). Furthermore, existing resilience studies in maltreatment predominately involve middle childhood and adolescence and have neglected young children (Walsh et al, 2010). The role that ethnicity may play in resilience also remains largely unexplored. The following sections review the current resilience and adaptability literature and discuss key resilience factors related to PTSD and child maltreatment.

Resilience and Adaptability

No universally accepted definition exists for resilience, but some researchers have provided a working conceptual reference to guide scholarly activity (Davydov, Stewart, Ritchie, & Chaudieu, 2010). Resilience definitions focus on lexical content, core psychological phenomena, adaptive behaviors in adverse conditions, factors that protect from harm, and factors that protect against future adverse consequences (Agaibi & Wilson, 2005). Primary definitions are reviewed here.

Operational definitions of resilience. Resilience may be defined as the “ability of adults in otherwise normal circumstances who are exposed to an isolated or potentially highly disruptive event, such as the death of a close relation or violent life-threatening situation, to maintain relatively stable, healthy levels of psychological and physical functioning” (Bonanno, 2008, p.20). Werner (1995) defined resilience as “(1) good developmental outcomes despite high-risk status, (2) sustained competence under stress,

and (3) recovery from trauma” (p. 81). Resilience has also been defined as “the ability to absorb high levels of disruptive change while displaying minimally dysfunctional behavior” (Gillespie, Chaboyer, Wallis, & Grimbeek, 2007, p. 435).

Resilience as competent functioning. Other definitions of resilience include the development of competence despite adverse situations. Competence is “a pattern of effective performance in the environment (Masten et al., 1995, p. 1636). Competence is also referred to as “the effectiveness and the quality of individual adaptation as it reflects the adaptive use of internal and external resources to enable the successful negotiation of developmentally salient issues” (Obradović, van Dulmen, Yates, Carlson, & Egeland, 2006, p. 858). Competence is a complex term that “requires the organization and coordination of multiple mental and physical processes, [and has] multiple pathways to good developmental outcomes” (Masten et al., 1995, p. 1636). Competence involves interacting, multifaceted processes in internal and social domains, and is an ongoing rather than a dormant process (Masten et al., 1995).

Competence in children involves dimensions of functionality such as academic or emotional functioning (Masten et al., 1995). Competent functioning is the combination of various protective factors that overcome risk factors (Garmezy & Masten, 1986). Competence “is evidenced by the successful negotiation of developmental issues that are widely recognized among members of a particular society, culture and generation as salient for children of a given age period” (Obradović, van Dulmen, Yates, Carlson, & Egeland, 2006, p. 858). Studies on resilience in children reflect these views and seek to define interacting resources that impact outcomes. These interactions increase the probability of positive adaptation (Masten, Best, & Garmezy, 1990; Masten et al., 1999).

Resilience as adaptation to adversity. Resilience may also be defined by the

ability to adapt to adverse situations and maintain psychological health (Kim-Cohen, 2007). Adaptability, or “flexibility,” refers to multiple dynamic processes that occur over a period of time (Kashdan & Rottenberg, 2010). Adaptability reflects how a person: “(1) adapts to fluctuating situational demands, (2) reconfigures mental resources, (3) shifts perspective, and (4) balances competing desires, needs, and life domains” (Kashdan & Rottenberg, 2010, p. 866). Adaptability also relates to “an ability to discern multiple dimensions when assessing people or events” and relying “on personal meaningful values to guide decisions and actions” (Kashdan & Rottenberg, 2010, p. 868). Psychological inflexibility significantly correlates with various types of psychopathology including depression and anxiety disorders (Kashdan & Rottenberg, 2010). Psychological adaptability moderates the initial trauma and the development of negative long-term consequences of trauma exposure in child victims of political violence (Quota, El-Sarraj, Punamäki, 2001). Adaptability thus represents a portion of the broader concept of resilience. The term “resilience” will therefore be used during the remainder of the literature review to represent an ability to adapt to traumatic situations and maintain healthy levels of psychological functioning.

Resilience Factors in PTSD and Maltreatment

Many youth remain do not develop PTSD despite significant child maltreatment. These youth may benefit from resilience factors that buffer against PTSD development (Agaibi & Wilson, 2005). Resilience factors include 3 distinct levels: individual, family, and community factors (Afifi & MacMillan, 2011). Individual factors consist of personal characteristics and resources such as personality traits and coping ability. Family resilience factors consist of supportive familial relationships and resources. Community factors include relationships outside of the family such as peer relationships and religious

affiliation (Afifi & MacMillan, 2011). Key individual, family, and community resilience factors are reviewed below.

Gender. Gender has not been found to moderate resilience to PTSD (Zeidner & Endler, 1996). Females, however, have increased risk of trauma exposure and subsequent PTSD (Breslau, Chilcoat, Kessler, Peterson, & Lucia, 1999; Kean, Marshall, & Taft, 2006; Kessler, Sonnega, Bromet, & Hughes, 1995). Male gender may thus serve as a protective factor.

Ethnicity. Few studies explore ethnicity as a resilience factor, and fewer examine ethnicity, resilience, and PTSD together. Historically, resilience was determined by middle-class North-American and European values and so culturally driven conceptualizations of resiliency were neglected (Tummala-Narra, 2007). Resiliency remains, however, a culturally embedded construct (Chang & Lim, 2007; Tummala-Narra, 2007). Resilience through a cultural lens requires accounting for community-specific factors (e.g., SES), cultural beliefs, and ideals both in relation to positive adaptation and to trauma (Tummala-Narra, 2007). Adaptive aspects of childhood stressors, sociocultural support, global coping, and maladaptive and adaptive coping directly relate to cultural influences in college-aged women (Clauss-Ehlers, 2008).

Ethnic minority status itself may increase posttraumatic stress, contribute to vulnerability for psychopathology, and moderate resilience (Holleran & Jung, 2008). Individuals of minority status living in the United States may experience additional stressors such as racism, oppression, and poverty (Jones, 2007). Recently immigrated youth report a history of ecological challenges such as socioeconomic and immigrant status, English-proficiency, racism, and changes in family structure and social support systems that serve as barriers to resilience (Yeh, Kim, Pituc, & Atkins, 2008).

Few studies include an examination of collectively experienced trauma such as racism. Collectively experienced trauma has profound implications for the development of resilience on an individual and cultural level (Tummala-Narra, 2007). Additionally, culture needs to be examined not as a stagnant entity, but as an ever-changing phenomenon influencing resilience.

European American. Research in resilience and PTSD predominately composes a European American population as a sample of convenience. Little research specifically analyzes European American populations as mediating or moderating variables in the resilience process.

African Americans. The Africentric worldview, characterized by harmony, interconnectedness, authenticity, and balance, may directly influence how African American individuals cope with trauma (Jones, 2007). Spirituality and religion play a significant role in the Africentric worldview and can increase resilience by providing an explanatory model with which to understand the trauma (Jones, 2007). Religion in African American youth in adverse situations serves to promote social interaction and nurturance, supplies a safe haven, and provides an egalitarian, hopeful, loving message of Christian gospel (Haight, 1998, Phasha, 2010). The combination of spirituality with formal and informal kinship within African American communities interacts with traumatic experiences to provide support and increased positive effect on emotional outcomes (Jones, 2007). Trauma exposed African American youth drop out of school less than European American maltreated youth, which in turn increases the availability of other protective factors (Phasha, 2010).

Asian. Specific cultural factors and beliefs interact to develop indigenous resilience factors in Singapore (Chang & Lim, 2007). These factors include beliefs that

the self is malleable, coping flexibility, religiosity, and emotional regulation (Chang & Lim, 2007). South Asian adult women who had been sexually maltreated report 5 themes of resilience: a sense of hope, use of silence, South Asian community support, social advocacy, and intentional self-care (Singh, Hays, Chung, & Watson, 2010). Use of silence refers to the nature of South Asian cultures to discourage discussion of sexual trauma. These women report turning silence into a “coping strategy” by reflecting on thoughts and feelings surrounding the trauma (Singh et al., 2010). Resilience was also facilitated through community support, which consisted of positive and safe social support from family and friends (Singh et al., 2010).

Hispanic. Research into the beliefs, attitudes, and traditions of Hispanic culture and their subsequent impact on resilience is limited (Flores, Cicchetti, & Rogosch, 2005). Hispanic individuals are better able to positively adapt to negative stressors compared to European American adolescents (Holleran & Jung, 2005). Maltreated Hispanic youth who express increased reserve and control in interactions with adults also demonstrate increased coping with adverse or traumatic situations (Flores et al., 2005). Furthermore, respect to others and restraint of emotions in Hispanic youth may modulate expressiveness and promote resilience (Flores et al., 2005). Strong, positive ethnic identity, holding traditional Mexican values, and ethnic pride may also serve as resilience factors (Holleran & Jung, 2005). The concept of *familismo*, or “family first,” provides support and comfort, helping foster resilience (Holleran & Jung, 2005).

American Indian. American Indians are the most ethnically diverse cultural group in the United States (Cameron, & Turtle-song, 2003). This variability partially explains the limited research on PTSD and resilience in this group. Level of enculturation in American Indian youth positively correlates with resilience (LaFromboise, Hoyt, Oliver,

& Whitbeck, 2006). Resilience appears unaffected, however, by differences between individuals on a reservation and individuals in an urban environment (LaFromboise et al., 2006).

Limitations on ethnicity/minority status. Research on resilience within ethnic and minority groups is beginning to emerge in dissertation research (e.g., Bartoshuck, 2009; Brown, 2010; Chatman, 2007; Stanley, 2010). A lack of a culturally specific measure of resilience may partially explain the limitations in this area of research (Clauss-Ehlers, 2008). Furthermore, available research on race and resilience largely focuses on specific racial background and is only beginning to emerge for multiracial youth. Resilience factors extend beyond biological factors of ethnicity and gender. A review of specific resilience factors that vary between person to person regardless of race or gender is provided next.

Cognitive ability. PTSD symptomatology may vary as a function of cognitive ability in survivors of child maltreatment (Diamond, Muller, Rondeau, & Rich, 2001). Survivors of a traumatic event with a higher IQ report less early symptoms of PTSD than individuals with lower IQ (Brandes et al., 2002). Similar results have been found in children. Six-year-old youths with an IQ of 115 had less risk for PTSD, exposure to traumatic events, and nonassaultive trauma (Breslau et al., 2006). Adolescents also report less early symptoms of PTSD. A longitudinal study of 17-year-old at-risk adolescents suggests that intelligence is a significant protective factor (Breslau, Lucia, & Alvarado, 2006). Youth able to adapt may demonstrate increased verbal-intelligence scores than youth exposed to traumatic events with PTSD (Saigh, Yasic, Oberfield, Halamandaris, & Bremner, 2006). Differences in Full-Scale IQ between youth with PTSD and those without may be attributed to variances in verbal intelligence (Saigh et

al., 2006). No significant differences exist in other measures of general intelligence (Saigh et al., 2006). Highly developed cognitive abilities also relate to resilience in maltreated youth (Herrenkohl, Herrenkohl, & Egolf, 1994).

Interpersonal factors. Significant interpersonal variability exists in responses to traumatic events and include person-centered variables such as personality style and individual characteristics (Bonanno & Mancini, 2008; Collishaw et al., 2007). For example, a disposition towards self-enhancement prior to trauma serves as a buffer against psychopathology (Gupta & Bonanno, 2010). Individuals experience increased posttraumatic growth when they demonstrate high positive affect and low negative affect (Norlander, Von Schedvin, & Archer, 2005). Other person-centered variables such as feelings of situational control and positive self-instruction negatively correlate with PTSD symptom severity (Dörfel, Rabe, & Karl, 2008).

Extraversion and conscientiousness positively correlate with resilience, whereas neuroticism negatively correlates with resilience (Campbell-Sills, Cohan, & Stein, 2006). Similarly, previously maltreated adolescents with an internal locus of control are protected against negative effects of maltreatment such as depression (Moran & Eckenrode, 1992). Personality traits of positive self-esteem, ego-resilience, emotional regulation, and ego over-control also correlate with resilience in maltreated youth (Cicchetti, & Rogosch, 1997, Curtis, & Cicchetti, 2007, Moran & Eckenrode, 1992).

Adaptive flexibility, or the ability to adjust and transform one's behavior to cope with aversive conditions, is also a potential protective factor against trauma (Bonanno & Mancini 2008). Flexibility is directly related to better, more resilient outcomes in the aftermath of a significant stressor (Bonanno & Mancini, 2008). Maltreated individuals with increased propensities to disclose and discuss childhood sexual maltreatment,

positively reframe life events, limit time thinking about prior negative histories, and cognitively minimize those experiences, demonstrate increased resilience over those who do not (Himelein & McElrath, 1996).

Social skills. Previous research findings demonstrate the necessity of social support and secure attachment relationships in fostering resilience in maltreated children (Heller, Larrieu, D’Imperio, & Boris, 1999). As social support increases, risk for psychopathology decreases (Wu, Chen, Weng, & Wu, 2009). Competent social skills, engagement in social activities, and leadership skills should thus lower risk for psychopathology and promote positive adaptation. Few researchers, however, have examined the underlying mechanisms related to social skills. Furthermore, few researchers have looked at race and ethnicity in adaptability and fewer still on social support, race and ethnicity, and PTSD in maltreated children.

Psychosocial factors. Individual involvement in a social community also determines adaptability to traumatic events (Harvey, 2007). Increased levels of social support significantly buffer against negative effects of childhood trauma (Feldman, Conger, & Byrrette, 2004). Within a supportive community, trauma victims report a sense of relatedness and belonging and experience increased self-esteem (Harvey, 2007). A trauma victim’s ability to socially acknowledge being a survivor or a victim of trauma is a significant protective factor against PTSD (Maercker, Povilonyte, Lianova, & Pöhlmann, 2009).

Familial and social support. Warm and secure family relationships and the availability of social support outside the immediate family help mediate the harmful effects of maltreatment (Heller, Larrieu, D’Imperio, & Boris, 1999). Parental and familial support predicts resilience in youth (Thabat, Ibraheem, Shivram, Winter, &

Vostanis, 2009). Positive parental and familial support provides a sense of comfort, nurturing, and safety, and enhances emotional well-being (Masten et al., 1999). Parental support acts as a moderating factor between type of traumatic event and onset of PTSD (Thabat et al., 2009). Children with a significant attachment relationship who are raised in stressful home environments develop increased resilience with attuned communication (Sroufe, Egeland, Carlson, & Collins, 2005). Conversely, children in families with high stress demonstrate increased risk for maladaptive functioning despite individual strengths, suggesting an invaluable role of social support in resilience (Jaffee, Caspi, Moffitt, Polo-Tomás, & Taylor, 2007).

A positive relationship with a competent adult also results in improved recovery, communication skills, learning and problem solving skills, and overall outcome (Masten, Best, & Garmezy, 1990). Furthermore, an emotionally responsive caregiver promotes resilience in victims and mediates the effects of the high-risk environments (Egeland, Carlson, & Sroufe, 1993). Retrospective analysis of victims of childhood sexual maltreatment show inverse relationships between adulthood psychopathology and quality of adult love relationships, adolescent peer relationships, and familial support (Collishaw et al., 2007). Similar results are reported across ethnic groups (Flores, Cicchetti, & Rogosch, 2005). Neighborhood advantage, defined as the availability of resources in the neighborhood, may moderate resilience and other protective factors such as cognitive ability (DuMont, Widom, & Czaja, 2007).

Peer group support. Support from one's peer group promotes resilience in maltreated youth (Fantuzzo, Coolahan, & Weiss, 1997; Daud, af Klinteberg, & Rydelius, 2008). School-age children with supportive peers report feeling healthier than children without supportive peers (Stewart & Sun, 2004). Sexually maltreated adolescent females

demonstrate a positive correlation between increased resilient trajectories and positive peer influences (Edmond, Auslander, Elze, & Bowland, 2006). Furthermore, involvement in conventional extracurricular activities and perceived school support negatively correlates with depression and conduct disorder in youth exposed to violence, suggesting that the school's role may positively affect resilience (Ward, Martin, Theron, & Distiller, 2007).

Religious affiliation. Existential dilemmas about the purpose of life, the process of meaning making, and comfort from a religious faith challenge traumatized individuals to make meaning from trauma exposure (Fontana & Rosenheck, 2004). Little research focuses on religious affiliation as a protective factor and even fewer studies examine children. Differences in specific spiritual beliefs may impact the level of trauma exposure (Lee, Connor, & Davidson, 2008). For example, moral beliefs negatively correlate with depression and PTSD symptom severity in war veterans (Hasanović & Pajević, 2010). Additionally, Iran and Iraq war veterans from a Muslim community report that using religion to cope significantly correlates with positive mental health (Aflakseir & Coleman, 2009). Similarly, beliefs such as “Karma” and reincarnation may increase coping ability after a significant trauma (Davidson, Connor, & Lee, 2005).

Limitations in resilience factors. An understanding of the complex interactions of protective factors and their subsequent impact on resilience requires considerable future research. Many studies explore unique characteristics of resilience in qualitative descriptions of isolated clinical cases (e.g., Edwards, Sakasa, & van Wyk, 2005; Parens, 2008). Few conduct empirical assessments of personality factors such as social adaptability and trauma necessary for providing directions for future research and directing clinical practices.

The influence of race and ethnicity on protective factors and overall resilience has not been adequately explored. Methodological difficulties hinder studies that would otherwise consider race and ethnicity when examining protective factors. For example, studies on minority groups often have small sample sizes and so findings lack generalizability. Other studies often examine only a single racial or ethnic group.

Maltreatment Trauma and Resilience

Children were the founding population for the study of resilience (Richardson, 2002; Werner, 1982, 1993). Resilient children take an active and constructive approach to life problems and situations, work to receive positive attention from others, and incorporate faith and meaning into their worldview (Werner, 1984). Resilience may moderate child maltreatment and risk for trauma-related psychopathology. Only recent studies consider resilience as a variable of interest, leaving resilience in maltreatment an important area of investigation (Campbell-Sills, Cohan, & Stein, 2006; Walsh, Dawson, & Mattingly, 2010). Furthermore, studies on resilience in maltreatment focus on interactions between risk and protective factors rather than the overall construct of resilience (e.g., Martinez-Torteya, Bogat, von Eye, & Levendosky, 2009). Few researchers have explored the concept of resilience across multiple domains of functioning (Walsh, Dawson, & Mattingly, 2010).

Demographic Factors Influencing Resilience

The specific effects of gender and age on resilience remain unclear and some studies suggest limited relationships. Gender and age may play a role in resilience (Zeidner & Endler, 1996). Males may demonstrate increased resilience. Males exposed to extreme weather reported high levels of resilience and lower levels of distress, fear, depression, and anxiety than females 10 months later (Burke, Moccia, Borus, & Burns,

1986). Females may further internalize emotional reactions and have less opportunity than men to pursue active coping styles that help reduce negative trauma effects and increase resilience (Gibbs, 1989). A recent study on gender differences demonstrates that resilience is less prevalent during adolescence and young adulthood in previously maltreated males than females (DuMont, Widom, & Czaja, 2007). Studies on the role of age in resilience remain limited and any moderating effects of age are unclear.

Multiple and Single Incident Trauma

Few studies examine resilience in light of prolonged or multiple traumas and single traumatic incidents, and available studies often only explore multiple or single incident trauma in relation to treatment efficacy. Adolescents exposed to a single traumatic event demonstrate increased ability to adapt, but adolescents exposed to multiple traumas report more PTSD symptoms and higher levels of depression (Suliman et al., 2009). Cumulative childhood trauma positively correlates with increased symptom complexity in children (Cloitre et al. 2009). Studies such as these suggest that resilience may be affected by the number of traumas. This relationship remains largely unexplored, however.

Peritraumatic Factors.

Peritraumatic reactions characterized by intense fear or distress are risk factors for PTSD (Alvarez & Hunt, 2005). Peritraumatic dissociation is defined as “alterations in perception of time, place, and person, which reflect a sense of unreality” (Zoellner, Alvarez-Conrad, & Foa, 2002, p. 49). Unlike persistent dissociation, peritraumatic dissociation may be adaptive for victims of trauma and positively correlates with resilience (Bryant, 2009; McCaslin et al., 2009). Results about peritraumatic dissociation, however, are mixed. A meta-analysis of 35 empirical studies indicated that

peritraumatic dissociation may be at most a moderate risk factor for PTSD (Breh & Seidler, 2007).

Limitations in Maltreatment and Resilience

Ethical considerations limit the ability to study a construct such as resilience before and immediately following a trauma in a controlled setting. Researchers looking at resilience and maltreatment thus rely on recall of a traumatic event and a report of current psychological functioning following the original trauma. This may increase the possibility of distortions in self-report data and limit the ability to determine the positive effect of peritraumatic resilience factors.

Due to the ethically protected nature of populations of maltreated youth, research into ability to adapt following trauma remains plagued by small sample sizes. A small sample size becomes especially troublesome in studies on child maltreatment due to variations in factors related to the trauma experience itself. The nature and duration of the trauma may also impact a child's ability to cope effectively following the experience.

Few studies on resilience following maltreatment incorporate the possible moderating effects of race and ethnicity. Race and ethnicity may have a significant moderating effect on resilience and subsequent risk for psychopathology. Considerable additional research is required to apply these effects to resilience. The study sought to address these questions by examining the role of ethnicity and resilience in PTSD.

Purpose of Study

Resilience researchers seek to address why some people adapt following extreme stressors but others do not (Poulou, 2007). Resilience researchers examine the underlying processes, mechanisms, and predictors that contribute to resilience (Poulou, 2007, p. 92). This study examined the extent to which resilience, as defined by the

BASC-2 Adaptive Scales and the RSCA, is associated with PTSD symptoms in maltreated children.

Few researchers have examined resilience in maltreated youth at risk for psychopathology. Researchers who examine resilient tendencies often rely on self-report of adult survivors of child maltreatment, case studies, or insufficient sample sizes. The study aimed to address these limitations and examine resilience and PTSD in a sample of maltreated youth.

Furthermore, when considering resilience, racial and ethnic variables seldom are examined beyond demographic sample descriptions. Previous research has not examined whether ethnicity influences resilience and vulnerability to psychopathology in maltreated youth. This study examined differences between ethnicities when considering the relationship between resilience and PTSD-related symptoms. The information provided by this study will hopefully increase the empirical knowledge surrounding the role of resilience in protecting against the harmful effects of maltreatment and provide useful information for the assessment, treatment, and prevention of psychopathology in maltreated youth.

Hypotheses

This study examined whether greater resiliency relates to fewer PTSD symptoms in maltreated youth. This study examined specific subtests (i.e., Adaptability, Activities of Daily Living, Functional Communication, Leadership, Social Skills) of the Behavior Assessment System for Children and Parent Rating Scale (BASC-2, PRS) to determine the extent to which they were associated with PTSD symptoms on the Children's Posttraumatic Stress Disorder-Inventory (CPTSD-I).

The first hypothesis was that specific BASC-2 PRS subtests (i.e., Adaptability,

Activities of Daily Living, Functional Communication, Leadership, and Social Skills) would account for a significant amount of variance in number of PTSD symptoms. Specifically, each subtest score was expected to relate negatively to and significantly predict PTSD symptoms. This hypothesis was based on evidence that protective factors such as social, communication, and leadership skills, as well as general activity levels, increase resilience (Clark, 2002; Kasler, Dahan, & Elias, 2008; Punamäki, Qouta, & El-Sarraj, 2001; Shelton, 2009).

The second hypothesis was that ethnic background (e.g., African American, European American, Hispanic American, Native American, Asian American) would moderate the relationship between resiliency and number of PTSD symptoms. Participants of ethnic minority backgrounds (non European American) were expected to demonstrate a weakened relationship between Total Adaptive Skills and PTSD symptoms compared to a non-minority group (European American). This hypothesis was based on evidence that ethnicity may strengthen or weaken a relationship between variables that mediate a developmental path for PTSD in maltreated youth (Lemos-Miller & Kearney, 2006).

Third, a preliminary hypothesis involved the Resiliency Scale for Children and Adolescents (RSCA). A resiliency total score derived from the RSCA subtests (i.e., Sense of Mastery, Sense of Relatedness, and Emotional Reactivity) was expected to account for a significant amount of the variance in the number of PTSD symptoms. Scores on the Sense of Mastery, Sense of Relatedness, and Emotional Reactivity subscales were expected to significantly predict PTSD symptoms (Harvey, 2007; Silk et al., 2007; Wyman, Cowen, Work, & Kerley, 1993).

CHAPTER 3

METHOD

Participants

Participants included 55 youths aged 12-17 years from Department of Family Services (DFS) related sites in the Las Vegas area. Participants consisted of youths in Department of Family Services custody referred for a psychological evaluation within 60 days following removal from the primary caregiver. Referral location is based on the age of the child and caseworker preference. This study examined youth referred to a local Las Vegas psychological clinic that receives DFS referrals for youths aged 5 and older. Three youths were excluded on the basis of respondent fatigue and data integrity. For example, youths who failed to complete the primary measures in their entirety or who refused to answer certain questions were omitted from this study. Reasons for removal included neglect, physical and sexual maltreatment, abandonment, exposure to domestic violence, runaway, physical or sexual maltreatment of a sibling, and failed foster placement. Youth (69.6% female) were European American (29.8%), African American (26.3%) multiracial (21.1%), Hispanic (15.7%), Native American (5.3%), Hispanic (15.7%), or Asian American (1.8%).

Measures

Demographic/Information Sheet. A demographic/information sheet was used to request information regarding age, gender, race/ethnicity, country of origin, parental marital status, biological parent race/ethnicity, family socioeconomic status, family structure, experience with drugs and alcohol, primary language in the home, and religion. Additional questions involved exposure to violence in and outside of the family as well as

number of perpetrators, frequency of maltreatment, and maltreatment type. Additional questions assessed youths' understanding of the reason for removal.

Children's PTSD Inventory (CPTSD-I). The CPTSD-I is a semistructured interview to assess DSM-IV-TR PTSD symptoms across 5 subtests in youths aged 7-18 years (Saigh, Yasik, Oberfield, Green, Halamandaris, et al. 2000). The first subtest (2 questions) assesses exposure and reactivity to trauma. The second subtest (11 questions) assesses reexperiencing symptoms. The third subtest (16 questions) assesses avoidance and numbing symptoms. The fourth subtest (7 questions) assesses increased arousal. The fifth subtest (5 questions) assesses distress. Administration requires 15-20 minutes in youth reporting a single trauma. Responses are scored on a dichotomous scale and yield 1 of 5 possible diagnoses: PTSD Negative, Acute PTSD, Chronic PTSD, Delayed Onset PTSD, and No Diagnosis (Saigh et al., 2000). If an interviewee experienced a traumatic event, but refused to acknowledge it, then "No Diagnosis" is given (Saigh et al., 2000).

Content validity of the CPTSD-I was established through the work of 3 members of the DSM-IV PTSD Work Group independently rating the measure for correspondence with the current PTSD diagnostic criteria using a 0-100 Likert-type scale. Raters reported a mean subtest rating of 86.7 for the Situational Reactivity subtest, and a mean of 90 for all additional subtests, indicating consistently high levels of reviewer correspondence between the CPTSD-I and the DSM-IV diagnostic criteria (Saigh et al., 2000).

Saigh and colleagues (2000) reported high estimates of interrater reliability for the CPTSD-I with an overall interrater agreement of 98.1%. Excellent interrater agreement was also reported for overall diagnostic level (.96) and each of the four subtests (.84-1.00) (Saigh et al., 2000). Situational reactivity had moderate interrater agreement with a

kappa coefficient of .66 (Saigh et al., 2000). To test internal consistency, researchers administered traumatized and non-traumatized youth aged 6-17 years the CPTSD-I (Saigh et al., 2000). Results were high (.95) for overall diagnosis, indicating good internal consistency. Internal consistency estimates for each subtest were moderate (.53-.89) (Saigh et al., 2000). Cronbach's α for the CPTSD-I for the present study was .90.

Researchers examined CPTSD-I validity among traumatized and non-traumatized youth aged 7-18 years (Yasik et al., 2001). Convergent and discriminant validity of the CPTSD-I were assessed with the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985), Junior Eysenck Personality Inventory (JEPI; Eysenck, 1963), and the Children's Depression Inventory (CDI; Kovacs, 1992). CPTSD-I overall symptom endorsement was significantly correlated with the overall RCMAS and CDI symptom endorsement, indicating high internal consistency (Yasik et al., 2001). No relationship between JEPI extraversion and the CPTSD-I evidenced adequate discriminant validity. High concurrent validity was found when comparing the CPSTD-I to the Diagnostic Interview for Children and Adolescents-Revised PTSD module, Structural Clinical Interview for DSM, and clinician derived diagnosis (Yasik et al., 2001).

Behavior Assessment System for Children Second Edition (BASC-2; Parent Rating Scale). The BASC-2 PRS is a 160-item self-report questionnaire to assess adaptive and problem behaviors in home and community settings in youths and young adults aged 8-25 years (Reynolds & Kamphaus, 2004). The BASC-2 PRS is written at a 4th grade reading level and consists of forms for preschoolers (2-5 years), children (6-11 years), and adolescents (12-21 years). The BASC-2 PR is based on a 4-point Likert-type scale where "0=Never" and "4=Almost Always." The BASC-2 PRS takes approximately

10-20 minutes to complete. The BASC-2 PRS yields an Adaptive Skills composite score that assesses a child's ability to adequately function in home and community environments (Reynolds & Kamphaus, 2004). The Adaptive Skill composite score consists of subscales of adaptability, activities of daily living, functional communication, social skills, and leadership skills. The Adaptive Skills composite score and individual subscale scores were used in this study.

Reynolds and Kamphaus (2004) examined BASC-2 PRS internal consistency, test-retest, and interrater reliability. Moderate to high internal consistency was indicated by Cronbach's alpha in Composite (.87-.95), Clinical (.77-.88) and Adaptive (.73-.88) scales for children aged 2-18 years. Internal consistency was also examined in a clinical sample (Reynolds & Kamphaus, 2004). Median scale reliabilities were larger for the clinical sample than the general sample. The clinical sample demonstrated an increased alpha coefficient for multiple subscales on the Clinical scales, including hyperactivity, aggression, and activities of daily living. Results paralleled the normative sample on the Composite and Adaptive skills scales. Cronbach's α for the BASC-2 PRS for the present study was .97. Test-retest reliability was also established from the general and clinical samples (Reynolds & Kamphaus, 2004). Test-retest reliability was moderate to high for Composite (.78-.92), Clinical (.65-.87) and Adaptive (.74-.88) scales. Interrater reliability was moderate for preschoolers (.74), children (.69), and adolescents (.77).

Reynolds and Kamphaus (2004) examined BASC-2 PRS validity and found moderate correlations between scales for all age groups. Correlation patterns were similar for the normative and clinical sample. Construct validity was assessed via factor analysis (Reynolds & Kamphaus, 2004). A principal factor analysis was conducted across age groups and revealed a 3 and 4-factor structure. Convergent validity for the

BASC-2 PRS was found via significant positive correlations between the Behavioral Symptoms Index (BASC-2) and the Achenbach Scale of Empirically Based Assessment Total Problems score (.73-.84) (ASEBA; Achenbach & Rescorla, 2000). The BASC-2 PRS Adaptive subscales significantly negatively correlated with total scores on the ASEBA for all age groups (-.29 to -.71). Significant negative correlations were found between the BASC-2 PRS Adaptive scales and the CPRS-R (-.16 to -.77). Moderate to high correlations were found overall between the Behavior Rating Inventory of Executive Functioning (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000) and BASC-2-PRS (Reynolds & Kamphaus, 2004).

Resiliency Scales for Children and Adolescents (RSCA). The RSCA is a 64-item self-report questionnaire to assess core personal qualities of resiliency in youth aged 9-18 years (Prince-Embury, 2007). The RSCA is written at a 3rd grade reading level. RSCA scoring is based on a Likert-type scale where “0=never” and “10=almost always.” A total Resilience score was examined in the study that measures 3 domains of resilience: Sense of Mastery (MAS), Sense of Relatedness (REL), and Emotional Reactivity (REA). Each domain subscale takes approximately 3-5 minutes to complete.

Sense of Mastery refers to one’s confidence and ability to enjoy cause-and-effect relationships and interact with others (Prince-Embury, 2007). The Sense of Mastery subscale consists of the personal characteristics of optimism about one’s competence and life, self-efficacy, and adaptability to receive criticism and learn from one’s previous mistakes. Sense of Relatedness refers to feeling securely connected and comfortable with others in a social context (Prince-Embury, 2007). Sense of Relatedness refers to a sense of trust in others, perceived access to support, comfort with and around others, and tolerance of differences and autonomy. Emotional Reactivity refers to vulnerability,

sensitivity, threshold of tolerance, and arousal before the occurrence of negative or traumatic events (Prince-Embury, 2007). Emotional Reactivity refers to sensitivity to adverse events, recovery from adverse events, and impairment of functioning due to emotional arousal.

Prince-Embury (2007) examined RSCA internal reliability and test-retest stability among non-clinical youth aged 9-18 years. Internal consistency was indicated with Cronbach's alpha for Sense of Mastery (.85-.95), Sense of Relatedness (.89-.95), and Emotional Reactivity (.90-.94). Cronbach's α for the RSCA was found in the present study for Sense of Mastery (.96), Sense of Relatedness (.96), and Emotional Reactivity (.83). Test-retest reliability was also established (Prince-Embury, 2007). Test-retest reliability was indicated using Fisher's z transformation for MAS (.84), REL (.88), and REA (.90). Sixty-five adolescents (aged 15-18 years) also completed the RSCA twice with a mean interval of 8 days and a range of 3-23 days (Prince-Embury, 2007). Test-retest reliability was again high for MAS (.86), REL (.86), and RES (.77) (Prince-Embury, 2007).

Prince-Embury (2007) examined RSCA construct validity via confirmatory factor analysis (Prince-Embury, 2007). Ten factors were tested and 3 models of resilience were identified. Results confirmed that Model 3, consisting of the REA, MAS, and REL factors, was the best fit across age and gender groups (Prince-Embury, 2007). REA, MAS, and REL convergent validity was also assessed via multiple correlational studies (Prince-Embury, 2007). Researchers found that increased emotional reactivity (REA) scores correlated (.49) with vulnerability to bully victimization (Prince-Embury, 2007; Reynolds, 2004). In addition, the Piers-Harris Children's Self-Concept Scale, Second Edition, a measure of a child's self-concept (Piers, 2002), correlated with the Sense of

Mastery and Sense of Relatedness subscales (Prince-Embury, 2007). Researchers found a positive correlation (.60) between scores on the Piers-Harris 2 and RSCA subscales of MAS and REL. Adolescents were also administered the Conners' Adolescent Symptoms Scale: Short Form (CASS:S; Conners, 1997) and RSCA (Prince-Embury, 2007). MAS scores significantly correlated with conduct problems (-0.51), cognitive problems (-0.45), hyperactive-impulsivity (-0.37), and ADHD (-0.60), suggesting resiliency as a buffer. REL also significantly correlated with conduct problems (-0.57), cognitive problems (-0.54), hyperactive-impulsivity (-0.48), and ADHD (-0.64). REA positively correlated with conduct problems (0.59), cognitive problems (0.59), hyperactive impulsivity (0.48), and ADHD (0.65), suggesting the emotional reactivity increases vulnerability (Prince-Embury, 2007).

Procedure

Procedures followed University of Nevada, Las Vegas (UNLV) and Clark County Department of Family Services (DFS) policies regarding research with human participants. The UNLV Office for the Protection of Research Subjects, Institutional Review Board (IRB), and Social and Behavioral Sciences committee approved protocol #1005-3485M on November 9, 2011. An approved interlocal contract by UNLV and DFS is in accordance with county and state laws regarding children in protective custody.

Participants were recruited through DFS-related sites in Las Vegas, which refer youth for a comprehensive PTSD battery. Details of the study were discussed and researchers obtained assent to participate from interested youths before data collection. Researchers informed participants about limits of confidentiality, research confidentiality, and rights as a participant. Researchers also advised participants not to answer questions that made them feel uncomfortable. Additionally, youths were informed they could

withdraw from the study at any time without penalty.

Youths completed the demographic/information form as well as the CPTSD-I and RSCA. The BASC-2 PRS was completed by the caseworker familiar with the child or a parent or guardian if accessible. Assessments occurred in a confidential environment without the presence of CPS staff. A graduate researcher completed the CPTSD-I and demographic information sheet with the child. Demographics and CPTSD-I administration lasted approximately 35-45 minutes. Youths then completed the RSCA with the assistance of the graduate researcher. If youths did not endorse a traumatic event, then the interview was discontinued and remaining measures were not administered. Administration of the RSCA took approximately 20-30 minutes to complete.

If discomfort was noted during the course of the interview, then a graduate student was available for support. Participating youths were encouraged to take breaks during the assessment process. If fatigue was noted, then a follow-up session was scheduled to complete the measures. Appropriate actions were taken if a youth expressed intent to harm others or self. Debriefing of participants occurred following each assessment and consisted of further explanation of the study and procedures. Researchers solicited and address questions. All forms used for research were kept confidential by coding a number to ensure anonymity. A summary of each youth's responses was provided to the psychologist or other qualified staff. De-identified research data were stored in a locked filing cabinet in a university lab. Youths who agreed to participate in the study but whose caregiver did not fully complete the BASC-2 PRS were excluded. Youths who agreed to participate in the study but whose self-report tests were deemed invalid or whose responses were inconsistent were also excluded.

Data Analysis

A multiple regression analysis was conducted to assess the simultaneous effects of Adaptability, Activities of Daily Living, Functional Communication, Leadership, and Social Skills (BASC-2 PRS) on Total Posttraumatic Symptoms (CPTSDI) following a traumatic event. Hypothesis 1 was investigated using a linear multiple regression with scores on the BASC-2 PRS as the predictor variables and the total score on the CPTSD-I symptoms as the criterion variable. Hypothesis 2 was investigated using a moderated multiple regression with scores on the BASC-2 PRS as the predictor variables and the total score on the CPTSD-I as the criterion variable. Ethnicity was the moderator. Native American and Asian American ethnic groups were not included in the multiple regression due to small sample sizes. Hypothesis 3 was investigated using the RSCA. A linear multiple regression was used with scores on the Sense of Mastery, Sense of Relation, and Emotional Reactivity subscales as the predictor variables and total score on the CPTSD-I symptoms as the criterion variable.

CHAPTER 4

RESULTS

Hypothesis 1

The first hypothesis was that BASC-2 PRS, adaptive subtests (activities of daily living, social skills, functional communication, and leadership qualities) would account for a significant amount of variance in total PTSD related symptoms (CPTSD-I). Informal analysis of histograms and scatterplots revealed no serious threats to the assumption of linearity or to the underlying distributional assumptions of the residuals of the predictor variables. Statistical analysis using a variance inflation factor analysis (VIF) further revealed no threats to the assumption of linearity.

A linear multiple regression revealed that BASC 2 PRS scores explained 34% of the variance in CPTSD-I scores ($F(5, 50) = 34.044, p < .05$). Social skills were the strongest predictor of total CPTSD-I scores ($\beta = .52, p < .05$) (Table 1). Follow-up analyses involved BASC-2 PRS subscales vis-a-vis specific PTSD symptoms (e.g., Reexperiencing, Avoidance and Numbing, and Arousal). No significant findings were evident for reexperiencing and avoidance and numbing. In particular, social skills did not significantly relate to any specific symptom of PTSD. Leadership skills, however, predicted arousal ($\beta = -.18, p < .05$). Hypothesis 1 was partially supported.

Table 1

Beta Values with Significance Tests for Independent Variables in the Multiple Regression Analysis

	B	Std. Error	Beta	T	Sig.
Adaptability	-.05	3.1	-.18	-1.3	.18
Activities	-.27	.28	-.21	-.21	.34
Communication	-.23	.22	.26	.25	.30
Leadership	-.53	.31	-.53	-.53	.10
Social skills	.62	.30	.52	.52	.05

Hypothesis 2

The second hypothesis was that ethnicity (e.g., African American, European American, Hispanic American, Native American, and Asian American) would moderate the relationship between resiliency and PTSD symptoms. A moderated multiple regression revealed no significant findings. Hypothesis 2 was not supported.

Hypothesis 3

The third hypothesis was that RSCA subscales (i.e., Sense of Mastery, Sense of Relatedness, and Emotional Reactivity) would account for a significant amount of the variance in number of PTSD symptoms. A multiple regression analysis revealed no significant findings. The analysis was repeated and excluded Emotional Reactivity, but no significant correlation was found. Hypothesis 3 was not supported.

CHAPTER 5

DISCUSSION

General Discussion

This present study examined the relationship between PTSD-related symptoms and the resilience factors of adaptability, daily activities, functional communication, leadership, and social skills among diverse adolescents exposed to trauma. Participants included adolescents in DFS custody who were in a foster home or with a family member. Youths had been exposed to physical abuse, sexual abuse, or neglect, or reported witnessing a traumatic event happen to another person.

The first hypothesis was that the BASC-2 PRS subtests of Adaptability, Activities of Daily Living, Functional Communication, Leadership, and Social Skills would relate negatively to PTSD symptoms. Higher endorsement of PTSD symptoms related to increased levels of social skills. Additionally, higher endorsement of arousal related to lower levels of leadership ability. Social skills relate closely to the development of resilience in children (Heller, Larrieu, D'Imperio, & Boris, 1999). Few, however, have examined the process through which appropriate and positive social relationships are fostered in children who have experienced maltreatment. This present study sought to identify factors that may promote social ability and further social relationships in this population.

Social skills increase the possibility for positive friendship experiences and social support networks, which increases psychological well-being (Demir, Jaafar, Bilyk, & Ariff, 2012, Harper, Stalker, Palmer, & Gadbois, 2005). Increased friendship experiences may in turn reduce the risk for disorders such as PTSD. In addition, children with increased social support networks and secure attachment relationships typically

demonstrate resilience and less risk for psychopathology (Heller, Larrieu, D'Imperio, & Boris, 1999; Wu, Chen, Weng, & Wu, 2009). Conversely, low levels of social support constitute a risk factor for PTSD (Nooner et al., 2012; Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012). Social Baseline Theory researchers suggest that satisfying social relationships decrease hypothalamic-pituitary-adrenal and stress-related autonomic activity, increase perceived security, and help regulate negative emotion (Beckes & Coan, 2012).

This present study is contrary to the literature regarding the resilient qualities of social skills. Youth of various trauma histories were examined shortly following the reason for removal from home. One possible explanation for these contrary findings is that adaptive qualities related to social skills may not be made apparent until a significant amount of time passed following the primary trauma. Many studies of resilience rely on retrospective accounts from adults. The true advantage of social skills may occur only after a youth has had time to adapt to immediate changes in the environment and to foster adaptive social relationships. Another possible explanation is that social skills' relationship to PTSD symptoms may be moderated by activities of daily living, functional communication, and other factors. The relationship between social skills and PTSD symptoms may require that youth have access to daily activities that increase positive social interactions, such as a consistent peer network or supportive caregiver.

Youths with increased social skills may also demonstrate increased participation in the interview process and openness to acknowledge PTSD symptoms. Poor social skills may result in a struggle to understand the purpose of the interview or difficulty understanding the examiner's verbal and nonverbal communication (Fontes, 2010). These youth may exhibit decreased motivation to perform well or answer truthfully to the

questions posed by the examiner (Fontes, 2010). Traumatized children may also display difficulty developing trust and rapport (Faust, Chapman, & Stewart, 2008). Social skills, however, may help a child more easily foster rapport and trust (Bronstein, Nelson, Livnat, & Ben-Ari, 2012). Socially confident children may also exhibit improved articulation, social composure, social experience, and general improvement in conversational performance (Prisbell, 1991). In a diagnostic interview, improved articulation may allow a clinician to make more informed judgments regarding the presence or absence of specific symptoms. Finally, small sample size and varying degrees of trauma in the participants in this study may account for the unexpected finding.

The relationship between leadership and arousal symptoms remains less clear and few studies examine leadership in youth. Few studies examine leadership in youth or theorize over possible benefits of leadership abilities (Mawson 2011). Youth with leadership skills demonstrate increased assertiveness and relational strategies to exert control over their environment (Mawson, 2011). Youth with leadership skills also demonstrate increased positive self-perceptions, lower social anxiety, and secure orientation to peers (Scharf & Mayseless, 2009). Lower social anxiety and increased assertiveness and relational strategies may increase the potential for fostering bonds with others, an important aspect of resilience (Heller, Larrieu, D'Imperio, & Boris, 1999). The ability to exercise relational strategies and experience lower social anxiety may allow a youth to positively adapt to new situations and relationships as well as help foster additional social opportunities with other youth which provides increased support for social skill development and peer relational development (Certo, 2011).

Leadership skills may also allow a youth to experience an increased sense of

control over his or her environment. Research remains sparse in this area, however, and any relationship is speculative. An increased sense of control may alter the appraisal of a trauma experience by the child. Ehlers and Clark's (2000) model for PTSD in children suggests that negative appraisals of a traumatic memory may increase risk for PTSD. A child with a sense of control may appraise a trauma differently and experience less stress in a traumatic situation than a child without a sense of control. A more positive or hopeful appraisal may lead a child to additional proactive and adaptive behaviors, less general PTSD symptoms, as well as less physiological arousal related to the trauma. Additional research however is necessary to determine the specific influence leadership skills may have.

The second hypothesis was that ethnic background would moderate the relationship between total adaptive skills and PTSD symptoms, with minority groups demonstrating a weakened relationship. Ethnic background did not moderate this relationship, however. Diminished sample size among specific minority groups may explain the lack of relationship between these variables. Furthermore, the sample was not equally split between each ethnic group, limiting the ability to compare groups.

Another possibility is that participants came from a highly ethnically diverse community. Las Vegas contains a population of a wide range of diversity, including White non-Hispanic (47.9%), Hispanic (31.5%), and African Americans (11.1%) (US Census Bureau, 2012). This remains considerably more diverse than the national average, which includes a population of White non-Hispanic (63.4%), Hispanic (16.7%), and African Americans (13.1%) (US Census Bureau, 2012). Ethnic minority status remains a risk factor for posttraumatic stress and psychopathology, though communities with increased diversity may serve as a protective factor for minority youth (Holleran &

Jung, 2008).

The third hypothesis was that RSCA subtests (i.e., Sense of Mastery, Sense of Relatedness, and Emotional Reactivity) would negatively relate to PTSD symptoms.

This hypothesis was not supported. The benefits of strong Sense of Mastery and Sense of Relatedness and less Emotional Reactivity were not evident. Other studies, however, indicate that factors related to a high sense of mastery, secure relations with others, and emotional regulation lessen risk for psychopathology (Curtis & Cicchetti, 2007; Heller, Larrieu, D'Imperio, & Boris, 1999; Wyman, Cowen, Work, & Kerley, 1993).

Previous studies indicate that 33-48% of maltreated youth are resilient, though the specific protective factors that foster resilience remain unclear (DuMont, Widom, & Czaja, 2007). The variables in this study were selected based on Prince-Embury's (2007) work identifying 3 aspects of resiliency: Sense of Mastery, Sense of Relatedness, and Emotional Reactivity. The item development of the RSCA was based on retrospective reports from resilient adults who experienced a trauma as a child (Prince-Embury, 2007). Research remains unclear when precisely specific resilience factors influenced these resilient adults. In the case of children currently in DFS custody, certain resilience factors that appear on the RSCA may not impact resiliency until a later time.

Clinical Implications

This present study examined resilience and posttraumatic symptoms in maltreated youth to guide future prevention, assessment, and treatment endeavors. Each youth exposed to maltreatment has a unique collection of risk and resilience factors in his or her environment and interpersonally. Transactions of these risk and resilience factors determine individual risk for PTSD. Thus, understanding these factors and their interaction remains important for the prevention, assessment, and treatment of PTSD.

Prevention. Findings from this present study contain implications to help aid preventative efforts in maltreated youth. The development of secure attachment relationships remain essential for resilience in maltreated youth (Heller, Larrieu, D’Imperio, & Boris, 1999; Wu, Chen, Weng, & Wu, 2009). Social skills may help maltreated youth foster these secure relationships. The documented link between resilience and social support suggests that clinicians should teach proper social skills and work to foster strong social relationships for children at risk for maltreatment or children who have been maltreated.

Safe and nurturing relationships with children at risk for trauma symptoms may also aid in prevention. Youth with low social connectedness may be at increased risk for PTSD symptoms compared to youth with high social connectedness (McDermott, Berry, & Cobham, 2012). Efforts should be made to increase a child’s sense of social connectedness in his or her environment. Clinicians should examine the role of school-, family-, and community-based methods to boost social support to determine their efficacy.

Assessment. Findings from the present study indicate that clinicians should focus assessment on resilience factors that may protect against the harmful effects of PTSD as well as symptoms of PTSD and maltreatment history. The RSCA can be used to identify specific resiliency factors in children and to inform future areas of intervention to foster resilience (Prince-Embury, 2007). The Connor-Davidson Resilience Scale (CD-RISC) is an alternative resilience measure that has been studied in adolescents (Connor & Davidson, 2003). The CD-RISC is composed of 25 questions involving different aspects of resilience such as sense of personal control, how failure is conceptualized, ability to adapt, and relationships (Connor & Davidson, 2003). The Resilience Scale (RS) is

another resilience measure for Perseverance, Life Purpose, Self-Reliance, Equanimity, and Existential Aloneness (Wagnild & Young, 1993). Few, however, have applied this scale to maltreated youth.

The BASC-2 can be used to identify social skill level in children and provide a general score of adaptability and resilience (Reynolds & Kamphaus, 2004). The Social Skills Improvement System Rating Scales (SISS) examines the social skills of Communication, Cooperation, Assertion, Responsibility, Empathy, Engagement, and Self-Control and can be used to identify specific areas for intervention (Gresham & Elliott, 2008).

In addition to specific measures of social skills and resilience, assessment of children at risk for trauma symptoms can include observation and interviews with the child and primary caretaker. Observations of the child's social skills may provide information of the child's conversation style, speech and language skills, and possible deficits. Interviews with the primary caretaker may provide additional information regarding a child's trauma history and symptoms, evidence of resilience, and social skills. Observations of a caretaker and child's interactions may reveal information important to a child's current emotional and behavioral functioning.

Treatment. The relationship between social skills and symptoms of PTSD suggests that intervention should target social skills and other variables related to resilience. The development of social skills may enable youth to foster social support and seek necessary services. Maltreated youth in foster care demonstrate a decreased likelihood to pursue social support and are more likely to cope independently than youth in foster care without a history of maltreatment (Browne, 2002). Maltreated youth who engage in avoidant or a distancing coping response demonstrate maladaptive coping

strategies and an increased risk for future maltreatment (Bal, Van Oost, Debourdeaudhuij, & Crombez, 2003; Sas, Cunningham, Hurley, Dick, & Farnsworth, 1995). Treatment should thus focus on improving social skills and helping youth apply social skills to seek support and engage in adaptive coping strategies.

Social skills training has proven efficacious for remediating some symptoms of depression, autism-spectrum disorders, and substance use (Espada, Griffin, Pereira, Orgilés, García-Fernández, 2012; Laugeson, Frankel, Gantman, Dillon, & Mogil, 2012; Thase, 2012). Effective social skills training may increase social communication, social cognition, social awareness, social motivation, assertion, cooperation, and responsibility (Laugeson et al., 2012). Few researchers apply a social skills module when examining treatments for PTSD and additional research is necessary to determine the efficacy of social skills training in children at risk for PTSD.

Trauma-Focused Cognitive Behavioral Therapy (TFCBT) is an evidenced-based approach for treating trauma in children and adolescents (Cohen, Mannarino, & Deblinger, 2006). TFCBT consists of psychoeducation, parenting skills, relaxation skills, affective modulation, cognitive coping and processing, trauma narratives, in vivo exposures, joint parent-child sessions, and a focus on enhancing future safety (Cohen, Mannarino, & Deblinger, 2006). TFCBT also includes a focus on adaptive functioning to prevent further traumas and to optimize a child's ability to function in his or her family and with peers and friends (Cohen, Mannarino, & Deblinger, 2006). TFCBT encourages the use of a social skills group treatment and parental reinforcement of a child's social skills (Cohen, Mannarino, & Deblinger, 2006). Like TFCBT, future treatments should integrate a multi-method approach to treating PTSD and include a social skills module to foster resilience and increase positive outcomes.

Limitations

Results from this study should be interpreted with caution due to several limitations. A key limitation involved sample size and low power. A larger sample may be needed to fully determine the relationship between resilience factors and ethnic influences on the risk for PTSD. Second, the sample was limited to youth in DFS custody or in the foster care system. Youths were removed from their homes with limited access to their parents. The study thus relied on data gathered from DFS case reports, youth self-report, and reports from the current guardian or caseworker of the child. The BASC-2 PRS relies primarily on the report of an adult familiar with a child's general behaviors and resilience. The accuracy of the BASC-2 PRS may be limited depending on the familiarity a caregiver or caseworker has of the child and length of time a child has been in DFS custody or with a specific caregiver. Reliance on youth self-report may have also been affected by an inability to articulate a complete maltreatment history.

Third, maltreatment type was not differentiated for this study. Participants with physical abuse, sexual abuse, neglect, a vicarious trauma history, or general trauma over removal from home were included together. Victims of physical and sexual abuse report more PTSD-related symptoms than victims of neglect or vicarious trauma (Luthra et al., 2009). Youths who report removal from home as a primary trauma may report a lower level of PTSD related symptoms over youths who were victims of other forms of maltreatment (Wechsler-Zimring, Kearney, Kaur, & Day, 2012). Maltreatment type may therefore moderate resiliency. Furthermore, comorbidity was not taken into account. Youth with PTSD demonstrate an increased rate of comorbidity, which may moderate the influence of specific resilience factors on mental health (Lipschitz, Winegar, Hartnick, Foote, & Southwick, 1999). The present study did not examine maltreatment type and

comorbidity because of limited access to assessment data and maltreatment history.

Fourth, this study did not differentiate between the socioeconomic status of participants. Socioeconomic status may significantly influence a child's ability to adapt to stressors and may place a child at increased risk for PTSD (Holleran & Jung, 2008; Jones, 2007; Yeh, Kim, Pituc, & Atkins, 2008). Youth in impoverished neighborhoods may experience additional stressors over youth in higher income neighborhoods.

Additionally, this study contained a number of resiliency factors with a focus on social skills. Socioeconomic status and home environment may positively correlate to language ability (Miser & Hupp, 2012). Thus, socioeconomic status may moderate the relationship between language ability and social skills with PTSD as well as serve as a particular risk factor for the development of PTSD in youth.

Fifth, this study did not account for the number of traumas a youth may have experienced. Participants who experienced an isolated traumatic event and those with multiple or ongoing trauma were included together. A positive relationship exists between cumulative total trauma experienced during childhood and symptom complexity (Cloitre et al., 2009). Adolescents exposed to multiple traumas report more PTSD symptoms over adolescents exposed to a single trauma (Suliman et al., 2009). Thus, the number of traumas may moderate the impact of resilience factors on overall risk for PTSD symptoms.

Sixth, this study relied upon a correlational design. The present study suggests that social skills serve as a risk factor regarding PTSD symptoms, though the development of social skills could be a consequence of another unidentified factor. For example, a positive or negative experience in the foster care system may increase or decrease risk for PTSD symptoms while also determining social skills. Thus,

establishing a clear role of social support in the resiliency process remains difficult and results should be interpreted with caution.

Seventh, this study assessed for PTSD and resilience less than a year following a child's removal from home, placement into foster care, or experience of trauma. As a result, the long-term effects of resilience factors on PTSD remain unclear. A follow-up study at a later date or a longitudinal design may be needed to fully determine the influence of resilience factors on PTSD-related symptoms.

Finally, the BASC-2 PRS scale was used to measure resilience and adaptability. Items on the measure include statements about resilience, but the BASC-2 PRS is primarily a measure of behavior. Findings on resilience and adaptability in youth should thus be interpreted with caution.

Recommendations for Further Study

Findings from this present study may have implications for the direction of future research. Attempts should be made to gather information from parents or caretakers closely affiliated with a child to gain increased accuracy regarding a youth's behavioral and resilient tendencies. Researchers may also compare parent reports of resilience with child self-reports to increase the validity and reliability of data gathered and to compare youth-reported resilient tendencies and those provided by an adult. Researchers should gather information across multiple informers to increase accuracy regarding maltreatment history.

Researchers should also differentiate maltreatment types (e.g., physical, sexual, emotional, and neglect) to further explore the moderating role of resilience between trauma-specific factors and PTSD. Specific protective factors may differ in terms of their protective ability depending on the preceding trauma. Researchers should also examine

the child's perception of the trauma with respect to severity and relate that with other assessments of maltreatment severity and type. The youth's perception of the traumatic event may interact with protective factors to determine risk for PTSD.

Researchers should also examine longitudinal data regarding youth at risk for PTSD to determine the full protective capability of specific resilience factors.

Researchers have examined resilient adults who report specific protective factors, but few have examined the development and role these protective factors have in regular intervals following the trauma (Prince-Embury, 2007). Longitudinal data may allow researchers to determine the specific role of each resilience factor and if critical periods exist for certain factors.

Additional research should examine applying a skills-training based program to current interventions for child PTSD. Trauma Focused Cognitive Behavioral Therapy begins to bridge this gap by providing cognitive and behavioral interventions as well as incorporating specific suggestions to improve and promote social skills (Cohen, Mannarino, & Deblinger, 2006). Further studies examining empirically validated treatments in a population of maltreated youth should include specific social skills-based interventions and procedures.

Procedures from this study should also be replicated among a larger sample of ethnically diverse youth. This study revealed no significant difference among specific ethnic subgroups of children at risk for PTSD. Research indicates, however, that ethnicity may increase risk for PTSD and moderate resiliency (Holleran & Jung, 2008). Few studies have examined this relationship and additional research is needed. Resilience initially was determined through North American and European values (Tummala-Narra, 2007). Additional research should seek to develop a culturally-

sensitive definition of resilience.

Future studies should also incorporate leadership as a potential protective factor in children at risk for psychopathology. Few studies have incorporated the role of leadership skills in at-risk youth and few conclusions can be gleaned from the available literature as to its role in prevention. Leadership skills should also be examined empirically in treatment procedures.

Conclusions

This study examined resilience in maltreated youth at risk for PTSD. Resilience research focuses on adaptation and specific factors that protect youth from the harmful effects of maltreatment. Unfortunately, resilience research remains understudied and future studies are essential to understand the complex pathways that allow a child to adapt to disadvantaged circumstances. This study attempted to further this line of research by investigating several specific protective factors such as social skills that may promote adaptive behaviors and resilience. Contrary to the current literature, social skills correlated positively with PTSD symptoms in this study, suggesting that social skills may increase risk for PTSD symptoms following a trauma. Additional research is required to understand the pathway between social skills and resilience.

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