THE DEVELOPMENT AND UTILITY OF DISSOCIATIVE SYMPTOMS FOLLOWING TRAUMATIC CHILDHOOD EVENTS

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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
December, 2002

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SYMPTOMS FOLLOWING TRAUMATIC

CHILDHOOD EVENTS

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ACKNOWLEDGMENTS

I would like to express my sincere appreciation to my adviser and mentor, Dr. Melanie C. Page, Ph.D., for her supervision, guidance, and support throughout this project. I would also like to extend my appreciation to my committee members, John M. Chaney, Ph.D., Larry L. Mullins, Ph.D., and Carrie Winterowd, Ph.D., whose time and suggestions were also invaluable. Special thanks also go to my supervisor and mentor, Sharon M. Simpson, Ph.D., for her help and suggestions not only throughout this project but also within many other aspects of my career. Thanks also go to Jane F. Silovsky, Ph.D. for her guidance and suggestions, and to the entire HOPES Team for their hard work and making this study possible.

Special thanks go to my parents, William and Mary Evans, as well as to my brother, sisters, and friends for all their love and support throughout my graduate studies. Much gratitude goes to my wife, Katherine. Without her enduring patience, love, and support, the achievements I have made would not have been possible and not nearly as worthwhile. Finally, very special thanks go to my daughter, Madeleine, for making me laugh and smile, for distracting me from time to time, and for helping me to maintain a little perspective on life.

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CHAPTER I

INTRODUCTION

A large number of children and adolescents in the United States are commonly exposed to traumatic events (United States Department of Justice, 2000). However, children's reactions to trauma have been studied to a much lesser extent than those of adults (Fletcher, 1996). Within studies that have been conducted with children, it has been concluded that the majority of their reactions can be categorized within the broad construct of posttraumatic stress disorder (PTSD), and that some of the most common symptoms experienced by children include symptoms of dissociation (Fletcher, 1996). Although a good deal of empirical research has been conducted to examine the development and utility of dissociation in adults, there is a paucity of such research with children and adolescents.

Previous research has indicated a link between dissociation and various pathology including PTSD symptomology (Bremner, Southwick, Brett, Fontana, Rosenheck, & Charney, 1992), and more specifically, the avoidance symptoms of PTSD (Griffin, Resick, & Mechanic, 1997). In addition, findings indicate that there are a number of characteristics that may influence the severity of dissociative symptoms developed in childhood victims of trauma. These include various personal attributes of the child, characteristics of the traumatic event, and aspects of the social support available to the child following this event. However, the majority of the studies assessing traumatic events and dissociative reactions have done so while assessing the impact of *specific* events. Therefore, the first goal of the present study is to evaluate the association of

dissociation with other pathology and various personal, event, and social support characteristics within a sample of children who have experienced a wide range of traumatic events.

Most researchers currently consider the function of dissociative symptoms to be the avoidance of painful cognitions and emotions associated with the trauma (Carlson, Armstrong, Loewenstein, & Roth, 1998). Thus, dissociation is thought to serve a self-protective purpose during a traumatic event; however, following the traumatic event it may impede emotional and cognitive processing by continually allowing the victim to avoid traumatic reminders. One nonintrospective technique that has been utilized to examine the process of dissociation is the Modified Stroop color naming Procedure (MSP). Several studies have investigated the association of PTSD symptoms with performance on the MSP. Although findings from the adult literature indicate that victims with PTSD exhibit greater Stroop color-naming latencies for trauma-related words, the findings regarding Stroop affects in child victims of traumatic events are unclear. In addition, no studies have examined the specific effects of dissociative symptoms on MSP performance. Thus, the second goal of the present study will be to assess the association of posttraumatic dissociative symptoms with performance on the MSP within a sample of children.

Finally, discrepancies between parental and child report of children's symptomology are common (Yarrow, Campbell, & Burton, 1970). These differences may be attributable to a myriad of causes including differences in the caregivers' exposure to the child's behaviors, access to the child's subjective feelings, differences in how children and caregivers perceive and interpret events, or differences in children's and caregivers'

abilities to conceptualize and articulate information. Whatever the reason, this discrepancy between caregiver and child report will be addressed within the current study through the use of separate measures of PTSD and dissociative symptoms for children and caretakers. In this way, all hypotheses will be examined separately for both child and caretaker report.

CHAPTER II

LITERATURE REVIEW

Childhood Trauma

Information obtained from the United States Department of Justice (United States Department of Justice, 2000), as well as, several recent survey studies provide evidence that a large number of children and adolescents in the United States are exposed to traumatic events. For example, Singer, Anglin, Song, and Lunghofer (1995) surveyed 3,735 students aged 14 to 19 and found that 3 to 22 percent of boys and 1 to 9 percent of girls reported they had been beaten or mugged in their neighborhoods; 6 to 33 percent of boys and 1 to 12 percent of girls reported being shot at or attacked with a knife; 27 to 40 percent of boys and 34 to 56 percent of girls reported they had been punched, slapped, or hit at home; and 1 to 7 percent of boys and 12 to 17 percent of girls reported they had been sexually abused or assaulted. In addition, most prevalence rates for *witnessing* these types of events were double the above figures. These findings are corroborated by other long-term longitudinal and large survey studies finding that nearly 10 percent of children report experiencing some degree of sexual abuse (Hernandez, 1992), and 43 percent of children report experiencing at least one traumatic event prior to age 18 (Giaconia, et al., 1995). These studies show a pattern of significant exposure to a variety of traumatic events. These studies are concordant with the United States Department of Justice's national crime statistics (2000) that indicate approximately 1 in 38 (i.e., over 380,000) juveniles aged 12-17 were assaulted, robbed, or raped in 1996. In addition, law

enforcement data indicate that 1 in 18 victims of violent crime, and 1 in 3 victims of sexual assault, are under age 12 (United States Department of Justice, 2000).

Posttraumatic Symptoms of Childhood Trauma

Although children and adolescents are particularly vulnerable to a large number of traumatic events, their reactions to trauma have been studied to a much lesser extent than those of adults. Concentrated research on children's reactions to traumatic events did not begin until the publication of the DSM-III in 1980 (American Psychiatric Association), and children's reactions were not specifically mentioned in the DSM until the DSM-III-R was published in 1987 (Fletcher, 1996). In addition to the fact that it was merely 20 years ago when the systematic study of childhood trauma began, a division currently exists in the child trauma literature in that abuse is usually not studied within the same literature as sudden trauma (e.g., car accidents, natural disasters) (Terr, 1991), making the integration of these two literatures difficult.

Even though the study of child and adolescent reaction to traumatic experiences is in its infancy, studies to date have shown that young victims of traumatic events can display a wide range of psychological, physiological, and behavioral responses to such events (Kinzie, Sack, Angell, Mason, & Ben, 1986; Merry & Andrews, 1994; Sack, et al., 1994). The majority of these reactions can be categorized within the broad construct of posttraumatic stress disorder (PTSD). In addition to the symptom criteria of response characteristics, event duration, and distress/impairment, the most recent edition of the DSM (DSM-IV; American Psychiatric Association, 1994), lists three broad classes of symptoms characteristic of PTSD: hyperarousal, avoidance/numbing, and re-experiencing. In their review, McLeer, Deblinger, Atkins, Foa, and Ralphe (1988) noted

that previous research on children and adolescents has found evidence for each of these classes of symptomology. First, they found evidence for multiple symptoms of hyperarousal such as increased arousal (e.g., startle reactions, hypervigilance, and difficulty sleeping), loss of developmental achievements (e.g., enuresis and encopresis, appetite change, stomachaches, and headaches), increased irritability, and an array of internalizing and externalizing behaviors (e.g., outbursts of anger, oppositional behavior, self-injurious behavior). Second, they concluded that common symptoms of avoidance/numbing included such things as phobic or avoidant behaviors, affective numbing, and dissociation phenomena. Finally, they observed that re-experiencing phenomena included such things as nightmares and trauma-related repetitive or inappropriate behaviors. Overall, these authors cited that numerous clinical reports and investigations have identified a wide range of symptomology suffered by child victims of trauma. Further, many of these symptoms are associated with the diagnosis of PTSD.

Carlson, et al. (1998) proposed that many symptoms of PTSD such as startle responses, autonomic and physiological arousal, intrusive thoughts, nightmares, and dissociation are actually brought about by the constant state of hypervigilance and continued expectation of danger that is common in individuals who experience traumatic events. According to this hypothesis, hyperarousal symptoms are part of the preparatory response of the mind and body to the expectancy of danger. Because of this expectation, traumatized individuals experience symptoms of physiological arousal, including symptoms of anxiety, somatic symptoms (as a result of chronic hyperarousal), and PTSD symptoms such as startle response and autonomic arousal when reminded of the event. In

addition, they may experience cognitive hyperarousal in the form of symptoms such as hypervigilance, intrusive thoughts, and nightmares.

Prevalence of Posttraumatic Stress Disorder in Children

Findings regarding the prevalence of PTSD following trauma vary depending on a number of factors (e.g., the population measured, the measures employed, and the timing of the assessment). Based on a meta-analysis of 2,697 children from 34 separate samples, Fletcher (1994; as cited in Fletcher, 1996) found that 36 percent of children exposed to traumatic events are diagnosed with PTSD. This is in contrast to 24 percent of traumatized adults being diagnosed with PTSD (based on 3,495 adults from five samples). On average, the incidence rates for every DSM-IV symptom of PTSD among traumatized children was higher than 10 percent, and most were higher than 20 percent.

Fletcher (1994; as cited in Fletcher, 1996) also found that five of the top nine ranked symptoms of PTSD for children were symptoms of DSM-IV re-experiencing criterion: feeling or showing distress at reminders of the event (51%); reenactment of significant parts of the event (40%); feeling as if the event were being relived (39%); intrusive memories of the event (34%); bad dreams about the event (31%); and talking excessively about the event (31%). Also included among the nine symptoms with the highest incidence rates were three symptoms of the DSM-IV avoidance/numbing criterion: affective numbing (47%); avoidance of reminders of the events (32%); and loss of interest in usual activities (36%). Within these studies, dissociative responses (e.g., feeling as if the event were being relived, intrusive memories of the event, bad dreams about the event) were found in 48% of all children exposed to a traumatic event, as opposed to only 16% of adults. With the high prevalence of dissociative symptoms found

in Fletcher's meta-analysis, it is not surprising to find that other authors have found high correlations between the experience of dissociation and other PTSD symptomology (Deb Deblinger, McLeer, Atkins, Ralphe, & Foa, 1989; Holen, 1993; Koopman, Classen, & Spiegel, 1994; Marmar et al., 1994; Rossman, Bingham, & Emde, 1997; Shalev, Peri, Canetti, & Schreiber, 1996; Weiss, Marmar, Metzler, & Ronfeldt, 1995). However, before these findings are reviewed in detail, it will be helpful to first introduce the construct of dissociation, including its potential positive and negative consequences.

Dissociation

The DSM-IV (American Psychiatric Association, 1994), defines dissociation as "a disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment" (p. 477). However, this definition of dissociation is meant to apply generally to extreme forms of diagnosable dissociation such as dissociative amnesia, dissociative fugue, and dissociative identity disorder. Although these disorders may be etiologically related to traumatic experiences in childhood, they are not the focus of this paper. Therefore, a definition that specifically describes dissociative symptoms that are directly associated with trauma is more appropriate. Definitions of traumatic-dissociation differ somewhat from author to author, however, most emphasize what Marmar, Weiss, Metzler, and Delucchi (1996) described as "a compartmentalization of experience in which elements of traumatic experience are stored in memory as isolated fragments rather than as an integrated whole." (p. 94). This splitting of experience can occur while the traumatic event is happening or following the event in the form of incomplete recall or intrusive memories of elements of the trauma (Marmar et al., 1996).

The function of dissociative symptoms appears to be the avoidance of painful cognitions and emotions associated with the trauma (Carlson et al., 1998; McLeer et al., 1988). Consequently, if dissociation were actually a form of avoidance, one would expect a strong positive relationship between measures of dissociation and measures of traumatic avoidance. Although no studies have attempted to examine this relationship in children, two separate studies have found tentative evidence for such an association in adults. In their study assessing peritraumatic (during the event) dissociation and PTSD in rape victims, Griffin, Resick, and Mechanic (1997) found a strong positive relationship between PTSD avoidance scores and peritraumatic dissociation. Marmar et al. (1994) also found a strong relationship between peritraumatic dissociation and the avoidance subscales of two measures of stress response in a sample of Vietnam veterans. Those veterans with high levels of dissociation were more likely to use avoidance strategies to cope with the trauma. Although the function of dissociation appears to be the avoidance of negative stimuli, the exact processes by which dissociation is able to accomplish this is not known.

One possible mechanism that has been hypothesized to produce such a fragmentation of experience is state-dependent learning, the process by which behavior or information is learned or encoded in one state (defined in behavioral, neurochemical, physiological, or affective terms) and is more easily retrieved in a similar state than in a disparate state (Putnam, 1991a). When an individual encodes information while in this aroused stated, he or she might have difficulty recalling that information while in a more relaxed state. Ordinarily, the retrieval of information is more impaired when the individual's state changes from encoding to retrieval, than when it is the same at both

time periods. An example of this is while a young boy is in a highly aroused state brought on by a trauma, information encoded during that time period may not be as assessable to him later when he is not in such an aroused state. By interfering with the normal storage, retrieval, and integration of thoughts, feelings, and sensations, dissociation may initially protect the individual from many aspects of the traumatic experience (Putnam, 1993).

Several studies assessing the state-dependent nature of the memories of adults diagnosed with dissociative identity disorder have found that the ability of individuals to retrieve previously acquired information is largely dependent on the processes operating at the time information was encoded (Ludwig et al., 1972; Nissen et al., 1988; Silberman et al., 1985; as cited in Putnam, 1991a; Szostak, Lister, Eckardt, & Weingartner, 1994). One example includes the findings of Silberman et al. (1985) that the alternate personalities found in DID could be mimicked by controls; however, there were distinct differences between the controls and actual DID patients in terms of cognitive performance. The authors concluded that the altered states of DID patients served as powerful state-dependent learning markers for the encoding and retrieval of information. Thus, it appears that at least in adults, dissociation may temporarily serve an important, self-protective purpose.

Normative Dissociation

It has been theorized that although the use of dissociation can become pathological, transient dissociative episodes are common phenomena during childhood (Putnam, 1993). Putnam (1991b) hypothesized that normative dissociation may be related to the natural capacity of children for fantasy play, imaginary companionship, and other imaginative mental activities. The potential to dissociate can then be viewed as one aspect of human

development. Moreover, the nature and degree of normative dissociation in children changes a great deal over the course of development, making it very difficult to set simple criteria to identify pathological levels. Consequently, the absolute levels of dissociative capacity in infants and preschool children is unknown, but it appears as though the capacity to dissociate peaks at about age 9-10 years and rapidly declines during adolescence to relatively low levels by early adulthood (Putnam, 1993; Putnam, 1991b).

This construct of a "dissociative-capacity" works as a model of dissociation only if dissociation exists on a continuum, ranging from normal to pathological levels, which has been previously proposed (Putnam, 1993). However, recent empirical evidence has called this model into question. Waller, Putnam, and Carlson (1996) illustrated that there are two distinct types of dissociation by performing taxometric analyses on a well-established measure of dissociation (i.e., the Dissociative Experiences Scale (Bernstein & Putnam, 1986)). They utilized three separate taxometric procedures (i.e., MAMBAC, MAXSLOPE, MAXCOV-HITMAX) that produce two distinctly different plots of scores if a measure is categorical vs. continuous. Findings indicated that pathological dissociative experiences such as depersonalization and dissociative amnesia were in fact "taxonic." Specifically, people can be dichotomized into two distinct groups according to whether they have had such experiences or not. However, the non-pathological form of dissociation is best characterized as experiences of "psychological absorption" (Tellegen & Atkinson, 1974), such as daydreaming or highway-hypnosis. These experiences exist on a continuum and are experienced to a greater or lesser extent by everyone. Additional evidence of two distinct dissociative-types comes from the study of twins. In one study, pathological dissociation was found to have no heritability whatsoever (Waller & Ross,

1997). Furthermore, Tellegen, Lykken, Bouchard, and Wilcox (1988) found that psychological absorption appears to have had a strong genetic component. Thus, it appears as though the more normative type of dissociation described by Putnam (1993), might best be characterized as psychological absorption, while the symptoms described and experienced by individuals who have experienced traumatic life events could be classified as dissociation.

Positive and Negative Aspects of Dissociation

Dissociation as an Adaptive Response

Even though a history of childhood trauma may be highly predictive of pathological dissociation (Waller, et al., 1996), it is not to say that dissociation, as a response to traumatic events, is necessarily pathological. In fact, a number of authors have previously conceptualized dissociation as an adaptive response to overwhelming trauma (Albini & Pease, 1989; Putnam, 1985, 1991b). Within this belief, dissociation at the time of trauma may protect victims from a full conscious appreciation of the terror, helplessness, and grief that has befallen them (Chu & Dill, 1990; Marmar et al., 1996). Ludwig (1983) agreed that dissociation serves as a protective response in the face of trauma, and that it may be neurologically related to the freezing and sham-death reflexes evoked by predators in many species. Ludwig summarized the potential adaptive functions of dissociation as: a) automatization of behaviors such that habitual and learned behaviors can operate with minimum conscious control allowing the person to escape the constraints of reality, b) resolution of irreconcilable conflicts by automatically relegating one set of values to a singular state of consciousness, c) isolation of catastrophic experiences through the efficiency of effort such that information only relevant to the task

at hand is accessible, and d) escape from the constraints of a harsh reality. Ludwig (1983) affirmed that the widespread prevalence of dissociation in its many forms is proof that dissociative reactions serve important functions and possess great survival value. Even though some authors have hypothesized that dissociating during a traumatic event may serve to lessen the impact of the event, a number of researchers have found empirical evidence that utilizing dissociation as a coping mechanism both during and after a traumatic event may have future negative repercussions.

Dissociation as a Precursor to PTSD

Empirical research linking dissociation and other PTSD symptomology in victims of various types of traumatic events is clear. Dissociation, both during (peritraumatic dissociation) and subsequent to a traumatic event is associated with an increase in PTSD symptomology. This link between dissociation and PTSD has been found within adult populations in victims of rape (Griffin et al., 1997), both male and female Vietnam combat veterans (Bremner et al., 1992; Marmar et al., 1994; Tichenor, Marmar, Weiss, Metzler, & Ronfeldt, 1996), oilrig disaster victims (Holen, 1993), Israeli accident terrorism victims (Shalev et al., 1996), emergency services personnel (Weiss et al., 1995), and fire storm victims (Koopman et al., 1994). In support of previous research (Spiegel & Cardeña, 1991), Griffin et al. (1997), and Bremner et al. (1992) concluded that dissociative symptoms are an important element in the long-term psychopathological response to trauma. Thus, peritraumatic dissociation may be a risk factor for the development of PTSD rather than an adaptive coping mechanism as previously suggested (Albini & Pease, 1989; Putnam, 1985; Putnam, 1991b, Koopman et al., 1994). In addition to studies of adult dissociative reactions to specific traumatic events, studies assessing

children and adolescents' reactions following trauma have also found that those victims who utilize dissociation to a greater extent also have higher scores on measures of posttraumatic symptomology (Deblinger et al., 1989; Rossman et al., 1997). Thus, available research indicates that traumatic-dissociation is positively associated with an increase in PTSD symptomology.

Dissociation Following Childhood Trauma

Because it has only been about 10 years since the first empirical studies were conducted to examine the phenomenon of dissociation in children (e.g., Deblinger et al., 1989; Sanders & Giolas, 1991) and reliable measures of dissociation in children have only recently become available, much of what we know about dissociation in children is actually based on the retrospective accounts of adults who were sexually or physically abused as children (Brunner, Parzer, Volker, & Resch, 2000; Putnam, 1991b). The following review of the literature on childhood traumatic-dissociation will begin with a brief examination of studies assessing dissociation and childhood trauma in adult samples, including individuals diagnosed with borderline personality disorder (BPD), dissociative identity disorder (DID), and both general clinical and non-clinical samples. Next, studies examining dissociation in children or adolescent samples will be discussed in greater detail, as the information that they provide is more applicable to the current discussion of dissociation.

Dissociation in Samples of Adults

Recent empirical studies have supported a strong relationship among childhood abuse, dissociation, and symptoms of borderline personality disorder (BPD). Several studies have found a high prevalence of physically and sexually abusive histories in

patients with BPD (Boon & Draijer, 1991; Gunderson, Kolb, & Austin, 1982; Herman, Perry, & van der Kolk, 1989; Ogata et al., 1990). These authors have also indicated that there appears to be strong positive associations among the experience of childhood trauma, dissociation scores, PTSD severity, and BPD symptomology. Patients with BPD have generally reported higher dissociation scores than those without this diagnosis (Herman et al., 1989; Ogata et al., 1990). Herman et al. also indicated that the level of dissociative symptoms in adults was better predicted by childhood traumatic history than by the current borderline diagnostic status.

A relationship has also been reported for childhood trauma and dissociative identity disorder (DID). In discussing the causes of DID, Kluft (1993) proposed a four-factor theory: a) the inherent capacity to dissociate, b) traumatic life experiences that overwhelm the ability of the child to utilize non-dissociative defenses, c) an environment that shapes the development of fragmentary aspects of experience, and d) an inadequate availability of comforting experiences. Thus, although the experience of a traumatic event may be important for the future development of DID, it is not the only factor affecting the development of this diagnosis. Kluft further proposed that the dissociative processes that underlie DID continue to serve an avoidant function for individuals who do not have the resources to cope with traumatic experiences. Rates of severe childhood abuse in patients with DID range from 85 to 95 percent (Coons & Milstein, 1986; Frischolz, 1985; Putnam, Guroff, Silberman, Barban, & Post, 1986; Ross, et al., 1991). In addition, the nature of the childhood trauma in many of these cases is notable for its severity, multiple elements of physical and sexual abuse, threats to life, and likelihood that the perpetrator is a primary caretaker or other close relationship (Marmar, Weiss, & Metzler, 1997).

A number of studies have investigated the relationship between dissociation and PTSD in general clinical samples. Carmen, Rieker, and Mills (1984) noted that studies of adults in mental hospitals indicate that these adults very often were abused during childhood. In addition, dissociative symptomatology is reported to correlate positively with self-reported childhood history of sexual and physical abuse, and neglect in clinical populations (Chu & Dill, 1990; Coons, Bowman, Pellow, & Schneider, 1989; Putnam et al., 1986; Ross et al., 1991). Rates of physical and sexual abuse in inpatient samples have been found to range from 60 to 70 percent (Carlson et al., 1998; Chu & Dill, 1990). Chu and Dill (1990) also reported that 83 percent of their sample had dissociative symptom scores above the median score for normal adults. Further, patients with a history of abuse reported higher levels of dissociative symptoms than those who were not abused, and those with higher dissociative symptom scores had significantly more diagnoses than those with lower scores. Carlson et al. (1998) found relationships between the extent of abuse experienced and later symptoms of PTSD and dissociation. The authors concluded that dissociation appears to be a primary response to sexual abuse trauma, but that it is less strongly associated with physical abuse experiences.

Similar relationships have been observed in non-clinical populations. In surveys of college students, researchers have found a relationship between dissociative tendencies and the reported incidence of childhood sexual and physical abuse (Briere & Runtz, 1988; Irwin, 1994; Sanders, McRoberts, & Tollefson, 1989). Irwin (1999) assessed past childhood abuse and both pathological dissociation and psychological absorption in 100 adults, mostly university students. He found that childhood trauma was predictive of pathological dissociation, but was not predictive of psychological absorption. Together,

the studies described above converge to suggest a relationship among childhood abuse, psychopathology (including personality disorders, dissociative disorders, and PTSD), and dissociation in adulthood. High levels of dissociation have been observed in individuals who have histories of childhood abuse (Spiegel & Cardeña, 1991), with some studies finding higher levels of dissociation in abused individuals than in non-abused controls (Briere & Runtz, 1988; Chu & Dill, 1990).

Dissociation in Samples of Children or Adolescents

The importance of interviewing children following a traumatic event regarding their psychological reactions has been well established (Terr, 1979; Lobovits & Handal, 1985; Reich & Earls, 1987; Weissman et al., 1987). Children with undetected dissociative symptoms can often remain misdiagnosed and improperly treated (Steinberg, 1995). In addition, it has been suggested that measuring dissociation can yield valuable clinical information about a child's response to trauma that is not available from PTSD scales or interviews. For example, information about dissociative symptoms may help to identify cognitive avoidance strategies or detect disturbances in memory (Carlson, 1997).

Several researchers have assessed the association between current dissociative symptomology and past history of trauma in children and adolescents admitted to inpatient hospital units (Atlas, Wolfson, & Lipschitz, 1995; Deblinger et al., 1989; Sanders & Giolas, 1991) or referred for psychological evaluations (Coons, 1996). Similar to studies assessing the past abuse experiences of adults admitted to inpatient units, Coons (1996) evaluated past abuse histories in 24 children and adolescents with dissociative disorders (aged 5 to 17 years) who had been referred for a psychological evaluation. Of these children, 79 percent reported sexual abuse and 71 percent reported

physical abuse. Only one of these children did not report either physical or sexual abuse. Atlas et al. (1995) assessed dissociative symptoms and somatization in 33 adolescents admitted to an acute inpatient unit (19 with histories of physical and/or sexual abuse, 14 without such histories). Those with a history of physical and/or sexual abuse had significantly higher dissociative symptomology scores than those without such a history. In addition, somatization scores correlated significantly with dissociation and history of abuse. Similarly, Sanders and Giolas (1991) assessed dissociative symptoms in 47 adolescents who had been admitted to a private mental hospital. They also found significant associations among dissociation scores, self-reported abuse, and negative home environment. Finally, in their review of the medical records of children aged 3-13 years admitted to an inpatient unit, Deblinger et al. (1989) compared the rates of PTSD symptomology across sexual abuse, physical (non-sexually) abuse, and non-abuse groups (29 children in each group). Children who were physically abused and non-abused were matched to those children in the sexually abused group. Although rates of PTSD symptomology were not found to differ significantly across groups, significant differences were found with respect to particular PTSD symptoms. Specifically, both the physically and sexually abused groups exhibited more avoidant/dissociative symptoms (e.g., loss of developmental achievements, decreased range of affect, avoidant behavior, loss of interest in usual activities, and difficulty making friends) compared to children who were not abused.

Studies have also examined the association between dissociative symptomology and the very recent experience of traumatic events in children and adolescents (Rossman et al., 1997; Putnam, Helmers, Horowitz, & Trickett, 1995). Rossman et al. (1997)

examined PTSD and dissociative symptomology in parents and their children aged 4 to 9 years. There were 30 children exposed to repetitive parental violence who were recruited from domestic violence shelters, 14 children who had been attacked by a dog who were recruited from an emergency room, and 42 children who had experienced only mild stressors who were community volunteers. Symptoms of trauma and dissociation were found to be higher in the dog attack and parental violence groups. In addition, the largest degree of dissociative symptoms was found in the single-occurrence dog attack group. The authors hypothesized that this association may be due to the severe and recent nature of the trauma. Putnam et al. (1995) examined dissociation and abuse severity in sexually abused girls (aged 6-15) and matched controls. Abuse severity was coded from Child Protective Services (CPS) reports and interviews with CPS workers and non-abusing caregivers. Sexually abused girls were assessed within one year of disclosing the abuse, and all participants were assessed a second time one year following the initial assessment. The sexually abused sample had more dissociative symptoms than did the comparison girls at both intake and follow-up. Thus, available research indicates that traumatic-dissociation is positively associated with an increase in PTSD symptomology.

Variables Associated with Dissociation

There are a number of characteristics that can influence the severity of symptoms seen in childhood victims of trauma. Several factors that have been examined in the empirical literature include personal characteristics (e.g., developmental level at the time of trauma, gender, ethnicity, socioeconomic status), event characteristics (e.g., severity of the trauma, type of event, perpetrator characteristics), social support following the trauma, and subsequent traumatic and negative life events (Carlson et al., 1998). A

number of these factors have been studied for their potential mediator/moderator effects on the experience of trauma and the future development of PTSD symptomology.

Child Characteristics

Nader (1997) noted that it is important to be mindful of developmental issues when assessing symptoms endorsed by children. For instance, some behaviors are more common at certain phases of development and signal disturbances at other ages. In fact, since very little is known about the age-specific effects of various types of traumatic experiences on children, being mindful of what is generally known about developmental issues may currently be all that clinicians can do (Carlson, 1997; Putnam, 1991b). Although one recent study failed to replicate the association between age and dissociative symptomatology (Brunner et al., 2000), a number of empirical studies involving children, adolescents, and adults show a fairly consistent negative relationship between the age of the respondent and the number of dissociative symptoms endorsed on measures of dissociation (Irwin, 1994, 1999; Ross, Joshi, & Currie, 1990; Ross, Ryan, Anderson, Ross, & Hardy, 1989; Rossman et al., 1997; Torem, Hermanowski, & Curdue, 1992; Zatzick, Marmar, Weiss, & Metzler, 1994).

Unlike the findings concerning dissociation and age, the findings regarding a possible association between dissociation and gender are not as clear. Several studies have found effects of gender on dissociation (Irwin, 1994; Ross et al., 1989; Torem et al., 1992), while others have not (Irwin, 1999; Ross et al., 1990; Sanders et al., 1989). In the studies that have found a difference, there appears to be a slight tendency for dissociative behaviors to be more common in women and girls. Moreover, these disparate findings cannot be dismissed as merely due to variations in assessment tools, as many of these

studies utilize the same measure of dissociation. There also is tentative evidence suggesting that the prevalence of dissociative symptoms may differ across certain cultural groups (Kulka et al., 1990; Modestin, Ebner, Junghm, & Erni, 1996). However, studies have found no link between dissociative symptoms and socioeconomic status or education (Modestin et al., 1996; Ross et al., 1990). It appears as though the only personal characteristic that has been found to effect level of dissociative symptomology with any consistency is developmental level or age.

Event Characteristics

In addition to personal characteristics, the responses of children who experience traumatic events are greatly affected by the unique characteristics of the event itself (Nader, 1997). Studies have referred to a number of different event characteristics as pertaining to the "severity" of the traumatic event. As it applies to childhood traumatic events, the severity of the stressor can be conceptualized as including the frequency and duration of the trauma, the nature of the trauma, perceptions of control within the trauma, and, if applicable, the relationship of the perpetrator to the child and the number of different perpetrators (Carlson et al., 1998).

As stated earlier, most studies examining the impact of traumatic events on the dissociative symptoms of victims have done so while assessing the impact of specific events, namely physical and sexual abuse. In assessing dissociative symptoms in adolescents admitted to an acute inpatient unit, Atlas and Hiott (1994) did not find statistically significant differences between the dissociation scores of three separate groups who had experienced either physical, sexual, or both sexual and physical abuse. However, two other studies have found significantly greater symptoms of dissociation in

victims who had experienced both physical and sexual abuse than in victims who had experienced sexual or physical abuse alone (Armstrong, Putnam, Carlson, Libero, & Smith, 1997; Chu and Dill, 1990). In addition to these contradictory findings, Brunner et al. (2000) found that higher levels of dissociation were associated with a history of sexual abuse, regardless of severity, and minor, but not severe, forms of physical abuse. These authors also found that emotional neglect appeared to be the best overall predictor of dissociative symptoms. Brunner et al. (2000) concluded that moderate but chronic emotional stress may be equal to or even more important than physical or sexual abuse in the development of dissociation. However, it could also be that in measuring the amount of emotional abuse (e.g., rejection, hostility, attachment/bonding problems), these authors may have actually been tapping into the degree of current negative attitudes towards the abusive individual. Such negative attitudes may, in turn, be highly associated with current dissociative symptoms. Although there are currently no distinct answers regarding the relative effects of physical versus sexual trauma on the dissociative symptoms of those who experience these types of trauma, it appears as though there may be an increased risk for dissociative symptoms for victims of sexual abuse who also experience physical abuse.

Another event characteristic that has been addressed within the child-trauma literature is the duration of the traumatic event (i.e., chronic or acute). As one can imagine, there is a great deal of overlap between the examination of chronic or acute events and that of abusive or non-abusive events, since most childhood traumatic events that are abusive (physical and sexual abuse, parental violence) are also chronic, and most events that are non-abusive (auto accidents, sports injuries, disasters) are often acute. In a

review of studies linking traumatic stress and general dissociative tendencies, Spiegel and Cardeña (1991) reported that repeated and severe childhood physical and sexual abuse is more strongly associated with adult dissociative phenomena than are isolated instances of abuse or other trauma. However, Spiegel and Cardeña did not discuss exactly how they dealt with the confound of chronicity and type of abuse. In his meta-analysis, Fletcher (1994; as cited in Fletcher, 1996) found that traumatic events that are ongoing or chronic lead to different, and generally more severe outcomes than do non-abusive events of short duration. Fletcher further noted that these increased symptoms of PTSD include: avoidance or numbing, hyperarousal, active avoidance of traumatic reminders, numbing of affect, actively trying to forget, regressive behavior, distress by reminders, exaggerated startle response, and reexperiencing in bad dreams.

The final event characteristics discussed here are the number and identity of the perpetrator(s) of abuse. In their study examining the dissociative experiences of sexually abused girls, Putnam et al. (1995) found that dissociation scores were associated with the number of different perpetrators. Since the number of different perpetrators would also likely be associated with the total duration of sexual abuse, this finding is not surprising given the previously discussed findings regarding the chronicity of abuse. Chu and Dill (1990) also found higher dissociation scores for women who were abused by family members than women who were abused by non-family members. They hypothesized that abuse by a family member represents a greater level of betrayal of trust and violation of boundaries than abuse by someone outside the family.

Caregiver Characteristics

Characteristics of the child's home environment (i.e., parental support, parental emotional distress, family disruptions) have also been found to impact the severity of dissociative symptoms following traumatic events. Disruptions in the family following trauma have been found to significantly predict not only dissociative symptoms, but also a host of other psychological and behavioral problems (Fletcher, 1996). Following the report of abuse, disruptions in the home environment, such as removal of the abused child or perpetrator have been found to correlate significantly with dissociative symptoms (Malinosky-Rummell & Hoier, 1991). In addition, Fletcher (1996) reported that previous research indicates that the separation of the child from his or her family during a disaster can have devastating consequences on the child's outcome.

The amount of support available to children following traumatic events is vital to their future psychological well-being. When caregiver support can be used to make the trauma seem more manageable, traumatic reactions may be minimized. However, caregivers may be unable to provide support if they too are in distress following a life-threatening traumatic event (Rossman et al., 1997). Several studies have found lower levels of parental distress, greater parental availability, and a positive parenting relationship to be related to lower levels of symptoms of PTSD and dissociative symptoms (Cohen & Mannarino, 1996; Gislason & Call, 1982; Holden & Ritchie, 1991; Rossman et al., 1997). For example, in a sample of institutionalized adolescents, Sanders and Giolas (1991) found that dissociation was related to not only past abuse, but also a previous negative home environment. Thus, it appears as though a high degree of parental

unavailability and negativity is associated with worse outcomes for children following trauma.

Overall, there are a number of characteristics that may influence the severity of trauma-related symptoms seen in victims of childhood trauma. The only consistent finding for the association between personal characteristics and symptoms was for the age of the victim, while there also appears to be some tentative evidence for an association between post-traumatic symptoms and ethnicity. There also appears to be relatively stable findings concerning the event characteristics of chronicity of traumatic exposure and the identity and number of perpetrators, with chronic events, perpetrated by family members, and/or by a large number of perpetrators having the most deleterious effects on children. Many of the results concerning physical versus sexual abuse are conflicting, however, there may be an increased risk for dissociative symptoms for victims of sexual abuse who also experience physical abuse. Finally, studies have found that disruptions in the family and a high degree of parental unavailability and negativity are associated with worse outcomes for children following trauma. While studies continue to assess the effects of trauma-characteristics on the development of pathology, such as dissociation, research is also attempting to find new and more objective means of assessing dissociative symptomology. The following is a discussion of one such procedure, the modified Stroop procedure.

Modified Stroop Procedure

Studies assessing the information processing aspects of PTSD in adults have shown that reexperiencing symptoms can be assessed in nonintrospective ways using the modified Stroop color naming procedure (MSP). In the MSP, participants are asked to

name the colors of negative-emotion related, neutral, or positive-emotion related words. Delays in naming the color of words are thought to occur when the meaning of the word attracts the participants' attention despite their effort to concentrate on the color of the word. These delays result in longer reaction times on words that have significant meaning for the individual (Williams, Mathews, & MacLeod, 1996).

Several studies have investigated Stroop performance in rape victims diagnosed with PTSD (Cassiday, McNally, & Zeitlin, 1992; Foa et al., 1991; Thrasher, Dalgleish, & Yule, 1994). The overall finding of these studies was that survivors of rape with PTSD exhibited selective Stroop interference for words related to the trauma, but this effect was not found in survivors without PTSD or in controls. It has been suggested that the longer color naming latencies for trauma words relative to neutral or positive words occurs because trauma-related memories are more easily activated in individuals suffering from PTSD (Litz & Keane, 1989, Litz et al., 1996).

There have also been several studies assessing MSP affects in children and adolescents diagnosed with PTSD (Dubner & Motta, 1999; Freeman & Beck, 2000; Moradi, Taghavi, Neshat Doost, Yule, & Dalgleish, 1999). Moradi et al. (1999) assessed color-naming latencies in children and adolescents (aged 9-17 years) diagnosed with PTSD, and 23 matched controls. They found that the PTSD group was significantly slower in naming trauma-related words. Dubner and Motta (1999) assessed PTSD symptomology and color-naming latencies for sexually abused, physically abused, and nonabused children and adolescents placed in foster care. Children were assessed within 2 years of their abuse, and 6 months of their foster care placement. Findings included that sexually abused children took significantly longer to color-name sexually related words

than did the physically abused children, and the physically abused group took significantly longer to name sexually related words than did the nonabused group. The authors hypothesized that this may have been because some of the physically abuse children were sexually abused as well. Finally, Freeman and Beck (2000) performed a color-naming task with sexually abused adolescent girls with a current diagnosis of PTSD, sexually abused girls without a current diagnosis of PTSD, and adolescent control girls. They found that the PTSD group was generally slower in naming colors, and that all groups were slower in naming sexual-abuse related words. The authors hypothesized that the lack of findings may have been related to children in general having not had as much experience with the use of "taboo" abuse-related words (e.g., penis). Thus, although the research on Stroop latencies with adults indicates that victims with PTSD exhibit greater color-naming latencies for trauma-related words, the findings regarding Stroop affects in child victims of traumatic events are unclear. However, authors remain optimistic that the MSP may prove to be a valid research tool (Dubner & Motta, 1999).

To date, no studies have examined the effects of traumatic-dissociative symptoms on MSP performance. However, in their study assessing the color-naming latencies of rape victims with PTSD, Cassiday et al. (1992) found that increased MSP interference in individuals with PTSD was related to intrusive, but not avoidant symptoms of PTSD. This has led some to speculate that cognitive interference for trauma-related information on the MSP may be a quantitative measure of the intrusive symptoms of PTSD (Freeman & Beck, 2000). This may include such dissociative symptoms as repetitive play involving themes of the trauma, nightmares, flashbacks or traumatic reenactments, or reactivity to cues associated with the trauma.

Limitations of Previous Research and Overview of Present Study

In general, there is a paucity of research on the relationship between dissociation and other traumatic symptomology in children and adolescents. From the limited research that has been done, we know that a certain amount of psychological absorption is normal in children and maladaptive forms of dissociation appear to be most predictable from a history of childhood trauma. Furthermore, more than one-third of children and adolescents exposed to traumatic events will experience a high degree of trauma-related symptomology, with nearly one-half experiencing dissociative symptoms. Given the large number of children and adolescents that are regularly exposed to traumatic life events, it is imperative that researchers continue to examine the impact of these events. The current study will first attempt to confirm previous findings that dissociation is associated with an increase in PTSD symptomology (Bremner et al., 1992; Griffin et al., 1997; Holen, 1993; Koopman et al., 1994; Marmar et al., 1994; Shalev et al., 1996; Tichenor et al., 1996; Weiss et al., 1995), specifically avoidance symptoms (Griffin et al., 1997; Marmar et al., 1994), and also with additional psychological diagnoses (Chu & Dill, 1990).

Second, a number of personal, event, and social support characteristics have been found by previous research to be associated with dissociative symptomology. Previous research findings regarding the personal characteristics of gender, ethnicity, and socioeconomic status have for the most part been inconclusive. However, most studies have found age differences on measures of dissociation with older children utilizing dissociation less than younger children (Irwin, 1994, 1999; Ross et al., 1990; Ross et al., 1989; Rossman et al., 1997; Torem et al., 1992; Zatzick, et al., 1994).

Findings regarding event characteristics are more difficult to summarize given the large amount of conceptual overlap among several of the constructs. To begin, most studies have found greater levels of dissociation among victims of sexual abuse, than victims of physical abuse (Carlson et al., 1998), with the greatest levels of dissociation among victims of both physical and sexual abuse (Armstrong, 1997; Chu and Dill, 1990). In addition, Putnam et al. (1995) found dissociation scores to be associated with the number of different perpetrators, and Chu and Dill (1990) found higher dissociation scores for victims of familial abuse than for victims who were abused by non-family members. The chronicity of the event has been found to be associated with dissociative symptoms (Spiegel & Cardeña, 1991), however, this event characteristic is highly confounded with the characteristic of interpersonal-nature. In their meta-analysis, Fletcher (1994; as cited in Fletcher, 1996) found that interpersonal/chronic events are related to higher levels of dissociation than are non-interpersonal/acute events. However, another study found that a group of children who had experienced a single dog attack (acute/non-interpersonal), exhibited greater dissociation than the group who had experienced parental violence (potentially chronic/interpersonal). Therefore, results regarding chronicity and interpersonal-nature are also inconclusive.

Finally, with regards to the characteristic of social support, studies have found lower levels of parental distress, greater parental availability, and a positive parenting relationship to be related to lower levels of dissociative symptoms (Gislason & Call, 1982; Holden & Ritchie, 1991; Rossman et al., 1997). This study will assess the degree to which dissociation is associated with the personal characteristics of age, ethnicity, gender, and household income; the event characteristics of frequency and duration (chronicity),

interpersonal-nature, and relationship of the perpetrator; and the social support characteristic of parental distress. As stated earlier, most studies assessing traumatic events and dissociative reactions have done so while assessing the impact of *specific* events. Therefore, other than meta-analytic results (Fletcher, 1994; as cited in Fletcher, 1996), this will be one of the few studies that can address a variety of event characteristics within a single study.

There is general consensus that the function of dissociative symptoms is the avoidance of painful cognitions and emotions associated with the trauma. In this way, dissociation may serve a self-protective purpose during a traumatic event. However, dissociation will also likely impede the emotional and cognitive processing of the traumatic event by continually allowing the victim to avoid traumatic reminders. Thus, victims who continue to use dissociation as a coping mechanism may be unable to resolve inconsistencies regarding their view of themselves or the world that were triggered by the trauma. In efforts to further investigate the processes by which dissociation operates following traumatic events, researchers have attempted to assess dissociation through nonintrospective techniques. One technique that may assist in delineating the process of dissociation is the Modified Stroop color naming Procedure (MSP). However, no studies to date have examined the effects of traumatic-dissociative symptoms on MSP performance. The present study will assess the validity of utilizing the MSP to investigate the processes by which dissociation operates following traumatic events.

Because Yarrow, Campbell, and Burton (1970) found that discrepancies between parental reports and child reports about symptoms and problems were common, and were usually attributable to differences in the caregivers' exposure to the child's behaviors,

access to the child's subjective feelings, differences in how children and caregivers perceive and interpret events, and differences in children's and caregivers' abilities to conceptualize and articulate information, the following seven hypotheses will be tested separately for child and caregiver reports:

1. Higher dissociation scores will be associated with greater symptoms of PTSD in general, and more specifically with greater avoidant symptoms. Dissociation will also be positively associated with total number of psychological diagnoses as measured by the ADIS.
2. Because measures of dissociation contain items that tap into both the construct of dissociation and psychological absorption, age of the child will be negatively correlated with dissociation scores because of its previously noted relationship to psychological absorption. However, the personal characteristics of gender, household income, and ethnicity will not be significantly associated with dissociation, as has been indicated by previous research.
3. In accordance with previous findings, traumatic events of greater frequency and of an interpersonal nature, will be associated with an increase in dissociation scores.
4. Similar to previous findings for PTSD symptomatology, greater caregiver emotional reaction to the event will be associated with greater dissociation scores, as will a fewer number of caregivers in the household, a more distant demographic relationship between the primary caregiver(s) and the child, and a lower educational level of the caregiver(s).
5. To evaluate the independent contribution of individual predictors to dissociation scores, a hierarchical multiple regression will be conducted if the variables in the

previous hypotheses are found to be related to dissociation. On step 1, any child-characteristic variables found to be related to dissociation scores will be entered, on step 2 caregiver emotional reaction and caregiver-characteristic variables will be entered, and on step 3 the interpersonal nature of the event will be entered. This order of entry reflects the theoretical relevance of the predictors.

6. Similar to the findings of pervious research, for those events of an interpersonal nature, a closer relationship of the perpetrator to the victim will be associated with higher levels of dissociation.
7. Finally, after controlling for PTSD symptomology, increased dissociation scores will be associated with longer MSP latencies for trauma related words. In addition, child reported dissociation will be a better predictor of MSP than will caregiver reported dissociation.

CHAPTER III

METHOD

Participants

Data were obtained on 38 children and adolescents (18 girls and 20 boys) and their primary female caregiver. The mean age was 11.45 years (*SD* = 2.3, range = 8 to 16 years), and the mean ages of girls and boys were 12.06 years (*SD* = 2.07) and 10.90 years (*SD* = 2.40), respectively. There were no age differences between girls and boys. The children were predominantly Caucasian (28.9% were African-American, 18.4% were Native-American, 2.6% were Hispanic). Total household monthly income ranged from $640 to $8,000 (*M* = $2273, *SD* = 1,621). A total of nine participants were recruited but did not complete this assessment. Reasons for not completing the assessment included not attending the assessment appointment (*n* = 2), the child declining to take part once arriving to the appointment (*n* = 1), and meeting the study's exclusion criteria (n = 6), which are discussed later.

Procedure

Participants were recruited from the emergency room of Children's Hospital of Oklahoma, or another medical ward at Children's Hospital after first being seen in the emergency room. This project was part of a larger study examining the efficacy of two brief interventions with children following potentially traumatic events. All children and their primary caregivers completed a pre-intervention intake assessment from which this project's data was collected. In order to retain participants and increase the likelihood of obtaining more complete data, all families were paid $20 for this assessment. Families

approached by a research team member at Children's Hospital and were provided with information about the project, and if interested, scheduled for an initial intake assessment (see appendix A for the referral script). In addition, informed consent and assent was discussed and obtained from the child and the child's guardian prior to this assessment. Appendix B contains consent and assent forms and the minor assent script utilized within this study. Initially, it was hoped that this assessment would take part within 72 hours of the initial ER visit. However, as referrals most often came from wards other than the ER at Children's Hospital, the time between the precipitating event and the first assessment was greater than expected, ranging from 4 to 34 days ($M = 15.15$, $SD = 7.06$). Nevertheless, the range in time from the precipitating event and this assessment was not significantly associated with differences in parental emotional reaction ($r\ (34) = -.18$, $p = .32$), and child or parent-reported dissociation ($r\ (33) = .01$, $p = .98$; $r\ (32) = .14$, $p = .44$), and PTSD ($r\ (34) = -.23$, $p = .19$; $r\ (33) = .06$, $p = .74$).

Inclusion criteria for this study were comprised of a) experiencing a traumatic event, and b) child was within the ages of 8 to 16 years. The definition of a traumatic event followed the DSM-IV definition and was defined as exposure to any event expected to cause a response of fear, anxiety, or horror. This may include any incident in which the child, or any other significant person in the child's life, was in danger of, or threatened with, serious injury or death. Examples of traumatic events include motor vehicle accidents, fires, tornadoes, school violence, and family violence. Exclusion criteria included a) either child or caregiver was actively psychotic, b) child's IQ score was below 70, and/or c) child was suicidal or in need of more intense psychological services. Although no children or caregivers were excluded from this study due to be actively

psychotic, two children were referred to other psychological services after meeting full criterion for PTSD. One child was excluded for receiving an overall intelligence scaled score below 70, and three were excluded because either they or their primary caregiver received a verbal scaled intelligence score below 70 due to English not being their primary language.

Measures

All children and caregivers agreeing to participate in the project completed an assessment to obtain demographic, historical, and current level of functioning information, as well as determine the presence/absence of exclusionary criteria. This assessment took approximately 2½ hours to complete. Snacks for both the child and caregiver were provided. Appendix B contains measures utilized within this study.

Demographic Characteristics

The demographic characteristics of age, gender, and ethnicity were assessed for children. Age and gender were assessed via open-ended questions, and ethnicity choices included: Caucasian, Native American, Asian/Pacific Islander, African American, Hispanic/Latina, and an "other" category where participants could write in an ethnicity. The demographic characteristics of gender, ethnicity, education, and income were assessed for caregivers. Age and gender were again assessed via open-ended questions, ethnicity choices were the same as for children, and education choices included: less than 7^{th} grade, 9^{th} grade, 10^{th} and 11^{th} grade, high school graduate, partial college, college graduate, graduate professional training. Other characteristics assessed of caregivers included the demographic relationship of the caregiver(s) to the child, and the number of caregivers in the household. Choices for demographic relationship of the caregiver to the

child included: mother/father, step-mother/father, life-partner, grandma/grandpa, aunt/uncle, cousin, kinship foster care, and other.

Trauma Characteristics and Severity

General characteristics about the traumatic event were obtained from the caregiver via an interview. Characteristics included type of trauma, frequency and duration of event, and relationship of the child to the perpetrator (if a perpetrator was involved in the incident).

Intelligence

To screen for significant cognitive delays, the Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990) was administered to each child. The K-BIT is an individually administered brief screening assessment of verbal and nonverbal intelligence, which takes approximately 20 minutes to administer. Test-retest reliabilities over approximately 21 days ranged from .92 to .95 for the K-BIT composite score. Split-half reliabilities were also high, ranging from .88 to .98 for the composite score. Construct validity analyses revealed that composite scores correlated .75 to .80 with lengthier IQ measures (Kauffman & Kauffman, 1990). A score below 70 could be indicative of mental retardation. Given the cognitive demands of the proposed interventions, any child with a score of 69 or below was excluded from the study.

PTSD Symptoms

To assess PTSD symptoms, both children and their caregiver were interviewed with the Anxiety Disorders Interview Schedule, Child (ADIS-C; Silverman and Albano, 1996a) and Parent versions (ADIS-P; Silverman and Albano, 1996b). The ADIS-C and ADIS-P are structured interviews that utilize DSM-IV (APA, 1994) criteria to diagnose

childhood and adolescent anxiety disorders. For the purposes of this study only the PTSD, Separation Anxiety Disorder (SAD), and Generalized Anxiety Disorder (GAD) scales were administered. All symptoms are assessed dichotomously as to whether the child has or has not experienced that symptom since the traumatic event. In assessing PTSD, there are a total of 18 items on the ADIS-C (reexperiencing - 5, avoidance – 8, hyperarousal - 5) and 17 items on the ADIS-P. All items on the ADIS-P correspond to items on the ADIS-C, with the exception that the ADIS-C has one less symptom of avoidance (developmental regression). Interrater reliability analyses for the ADIS-C and ADIS-P revealed overall Kappa coefficients of .84 and .83, respectively (Silverman & Nelles, 1988). PTSD symptom severity will be measured in the current study by a symptom count of all possible ADIS-C/P PTSD symptoms (range 0 – 18 on the ADIS-C, 0 – 17 on the ADIS-P). Reliability analyses revealed coefficient alphas of .87 and .85 for the symptom severity scales of the 18-item ADIS-C and 17-item ADIS-P, respectively.

Dissociative Symptoms

Two measures of dissociation were utilized in this study, the Children's Perceptual Alteration Scale (CPAS), a self-report measure, and the Child Dissociative Checklist (CDC), which is completed by a caretaker. The CPAS (Evers-Szostak & Sanders, 1992) is a 28-item self-report measure for the assessment of dissociative symptoms in children. It was designed for children between the ages of 8 and 12 years. Children are asked to rate their experience of the symptoms in each item on a four-point scale from 1 = "never happens", to 4 = "almost always happens". Early findings provide tentative evidence that the CPAS is a reliable and valid self-report measure, and that the children in this age group can provide information about their own dissociative experiences. Evers-Szostak

and Sanders (1992) reported finding partial construct validity in that the CPAS correlated significantly with behavioral measures of conduct problems ($r = .60, p < .01$), and psychopathology ($r = .44$ to $.54, p < .05$) in children. In addition, these authors found significant differences between the CPAS scores of normal and clinical children ($t\ (51) = 3.88, p < .001$) with those in the clinical group reporting higher levels of dissociation. Finally, split-half reliability analyses found significant correlations in both normal ($r = .64, p < .001$) and clinical ($r = .82, p < .001$) child samples. Within the current sample, the coefficient alpha for the CPAS was .82.

The CDC (Putnam, 1994) is a 20-item behavioral questionnaire for children aged 5 to 12 that allows parents or caregivers to record a child's symptoms within the past 12 months on a 3-point scale from 0 = "not true" of the child's behavior, to 2 = "very true". Someone who is familiar with the child's behavior over a number of contexts should complete the CDC. CDC items measure several types of dissociative behavior including dissociative amnesias, rapid shifts in demeanor, knowledge, age appropriate behavior and abilities, spontaneous trance states, hallucinations, alterations in identity, and aggressive and sexual behavior (Putnam, Helmers, & Trickett, 1993). The CDC has shown good construct validity, internal consistency across a number of samples, as well as good test-retest reliability (Putnam & Peterson, 1994). Putnam et al. (1993) performed reliability and validity analyses on the CDC utilizing samples of sexually abused girls, control girls, and children diagnosed with MPD and DDNOS. These authors reported the Spearman test-retest reliability over a one year interval to be rho = .69 ($N = 73, p = .001$) for their combined sample ($N = 181$). Cronbach's alpha for the overall sample was (alpha = .95) with individual sample alphas ranging from .64 to .91. Split-half reliability analyses

found significant correlations in their combined sample ($r = .88, p < .001$), with individual sample correlations ranging from .69 to .88. Partial construct validity was determined by Spearman rank order correlations between each item and item and item-corrected scale scores. These ranged from rho = .59 to .79 with a significance level of at least $p < .001$. Criterion-referenced concurrent validity was demonstrated by a Kruskal-Wallis comparison of scores across the four samples ($\chi^2 = 110.55, N = 181, df = 3, p < .001$). The coefficient alpha for the CDC was .84 within the current sample.

As there are currently no measures of dissociation, either child or caregiver report, that are standardized for children aged 8 to 16, these two measures were chosen for use with all participants in this study. The CPAS was chosen over the only other standardized, self-report measure of dissociation, the Adolescent Dissociative Experiences Scale (A-DES). This decision was made because the A-DES was standardized on children aged 11 to 17, and would likely exceed the reading and comprehension levels of most children in this study. The CDC was chosen because it is the only standardized, caregiver report measure of dissociation. In addition, the CDC has been utilized with older children, aged 6 to15 (Putnam et al., 1995), in at least one other study.

Emotional Reaction of Caregiver

To evaluate the caregiver's emotional response to the child's traumatic experience, the caregiver completed a modified version of the Parent Emotional Reaction Questionnaire (PERQ; Cohen & Mannarino, 1996). The PERQ (Cohen & Mannarino, 1996) assesses the caregiver's reaction to the traumatic event via 15-items each on a 5-point scale from 1 = "never", to 5 = "always". This measure was originally designed to

measure parental reactions to their child's sexual abuse. Given the wide range of trauma the children in the proposed project experienced, the wording of the PERQ has been changed to reflect this (PERQ-Injury; Brown, Kolko, & Kinnane, 1997). The caregiver will be asked to think about the traumatic event that resulted in the visit to the emergency room (i.e., fire, accident, assault, etc.) and then complete this questionnaire. Thus, "I have felt upset about my child being abused" will be changed to "I have felt upset about my child experiencing this incident". Someone who is familiar with the child's behavior over a number of contexts should complete the PERQ. The authors of this scale report good internal consistency and test-retest reliability. Reliability analysis revealed a high coefficient alpha of .92 for the PERQ with this sample.

Modified Stroop Procedure

The Modified Stroop Procedure (MSP) was intended to assess attentional biases to trauma-related material, as well as, the intrusive thoughts experienced by children (Dubner & Motta, 1999). Stroop stimuli were presented on an IBM desktop computer with a 15-inch monitor in uppercase letters about 2 cm high. Words were presented for 1.5 seconds with a 5-second interstimulus interval. The participant's reaction time (RT) for each trial was computer recorded (in msec) through the use of a voice-activated microphone with adjustable sensitivity.

During the MSP, children were presented with word and number-string stimuli in various colors (blue, black, red, yellow, and green). They were then asked to name the color of each word, as opposed to reading the actual word. Therefore, children's' RT for any given trial is composed of their latency to color naming a given word. The word conditions for the MSP included color-words, trauma/PTSD-specific words (e.g., scared,

pain, nightmare), eating disorder words (e.g., food, calorie, weight), and neutral words (e.g., pen, planet, paper). Neutral words were used as a base rate for color naming meaningful stimuli, while eating disorder words were included as a control word list utilizing a non-anxiety related disorder. All words were equivalent on the average number of syllables and reading difficulty. Ten words from each of the three word-conditions were presented three times, for a total of 90 randomized presentations. Response latencies were averaged across the 30 presentations of each of the three stimuli conditions, yielding three scores for each participant (i.e., neutral, eating disorder, trauma/PTSD-specific).

In order to verify children's abilities to complete the task, two practice exercises were administered prior to presenting the actual colored word stimuli. First, colored zeros were presented to verify that the child could accurately identify colors. Second, color-words were presented in differing colors and the child was asked to name the color of each word. This served as a practice for the actual MSP. If the child was able to perform both of these practice exercises, the actual MSP was administered. At the conclusion of the MSP, the child was asked to read a list of the neutral, eating disorder, and trauma-specific words. All participants in this study were able to accurately identify colors and read the word stimuli.

CHAPTER IV

RESULTS

Caregiver versus Child Report of Symptomology

Within the present study, both caregiver and child-reports were utilized to assess for symptoms of dissociation (CDC, CPAS) and PTSD (ADIS-P, ADIS-C). Therefore, both measures of dissociation and both measures of PTSD were compared to determine the degree to which caregiver and child-reports of dissociative and PTSD symptomology were concordant. First, correlations of the measures of dissociation and PTSD were examined separately. Summary scores for the CPAS and the CDC were used to represent level of dissociative symptomology, and sums of the total number of symptoms reported on the ADIS-P and ADIS-C were used to represent level of PTSD symptomology. Results indicated that the correlations between child and caregiver-report of dissociative symptomology (r (34) = .39, p = .02), and child and caregiver-report of PTSD symptomology (r (36) = .37, p = .03) were statistically significant. If it were not for the previous findings regarding the lack of agreement between child and caregiver report of symptomology, one would expect greater concordance given the large amount of both conceptual and actual overlap on these measures. Therefore, these measures of dissociation and PTSD were further evaluated to determine why these differences might exist.

The significant association between caregiver and child-report of PTSD symptomology was further analyzed by examining the intercorrelations among the three symptom-subscales of the ADIS-C and ADIS-P (i.e., avoidance, hyperarousal,

reexperiencing symptoms). These correlations can be found in Table 1. Upon examination of this data, it was discovered that the significant association of caregiver and child-report of PTSD symptoms was due mainly to the association between caregiver-report of reexperiencing symptoms and child-report of avoidance (r (36) = .39, p = .02), hyperarousal (r (36) = .52, p = .001), and reexperiencing (r (36) = .46, p = .004) symptoms. Conversely, caregiver-report of hyperarousal and avoidance symptoms was not significantly associated with the child-report of any PTSD symptom-category. These results are not surprising given the nature of the reexperiencing items on the ADIS-P, in comparison with hyperarousal and avoidance items. Reexperiencing items involve mostly overt behavior or behaviors of addition (e.g., child complaining of negative thoughts or nightmares, child getting upset or reporting physical sensations when reminded of event) versus hyperarousal or avoidant items that involve mainly covert behaviors or behaviors of omission (e.g., avoidance of things that remind them of the event, trying not to think of the event, stopped or been less interested in doing some things, being on the look out, not sleeping well).

In addition, when examining the mean symptom ratings for each category of reexperiencing, avoidant, and hyperarousal symptoms, caregivers were less likely to report symptoms of reexperiencing phenomena (see Table 2). However, caregiver and child reported symptoms of reexperiencing were much more likely to correspond (r (34) = .50, p = .003), than were caregiver and child reported hyperarousal (r (34) = .36, p = .04) or avoidant (r (34) = .09, p = .60) symptomology. This again demonstrates that these symptoms are more readily available to caregivers either through behavior that can be observed, or that is more easily reported by the child. These findings indicate that

measures of caregiver and child-report of PTSD symptomology were significantly correlated, and that a large amount of this association is due to the caregiver's report of the more objective reexperiencing symptoms of PTSD.

Next, the significant association between child and caregiver-report of dissociation was further evaluated. The examination of this data was made more difficult in that these two measures do not closely mirror one another, as do the ADIS-C and ADIS-P. In addition, neither the CPAS nor the CDC contain subscales that could be utilized to more closely examine the data. However, it was assumed that if caregivers were less likely to report the more covert symptoms of PTSD (i.e., avoidance, hyperarousal), they may also be less aware of the covert symptoms of dissociation experienced by the child. Therefore, the 28 items of the CPAS were evaluated for their potential to be observed. Items that could be easily observed by caregivers (e.g., "I cannot sit still," "I cannot stop myself from crying," "When someone calls me, I don't recognize my name") and items children would be more likely to talk about with others (e.g., "I don't remember what people tell me," "After I hit someone, I wish I hadn't," "I don't like to be at school") were combined to make an overt symptoms subscale. Items that children would be much less likely to discuss with others (e.g., "When I'm awake, I feel like I'm dreaming," "I hide my thoughts from others," "I cannot stop my thoughts, but I would like to") were combined to create a covert symptoms subscale. Creating such subscales for the CDC was not possible because all items on the CDC reflect observable or readily reportable behavior of the child. Therefore, all CDC items were regarded as inquiring about overt behavior. Results indicate that caregiver-report of dissociative symptoms, as measured by the CDC, was significantly associated with the more overt, child-reported symptoms from the

CPAS (r (35) = .42, p = .01). However, caregiver reports of dissociation were not significantly correlated with the covert symptom subscale from the CPAS (r (35) = .32, p = .06). This finding mimics that from the comparison of caregiver and child-reports of PTSD symptomology. That is, caregiver reported symptoms of dissociation are significantly associated with the more overt dissociative symptoms measured by the CPAS, but not with the covert symptoms measured by this questionnaire.

Primary Analyses

Hypothesis 1: Association Between Dissociation and other Pathology

Hypothesis 1 stated that higher dissociation scores would be associated with greater symptoms of PTSD (especially greater avoidant symptoms) and with the total number of diagnoses measured by the ADIS. Within the current study, it was found that the degree of dissociation reported by children was significantly associated with PTSD severity (r (34) = .43, p = .01). In addition, children's dissociation scores were correlated with avoidance (r (34) = .45, p = .007) and reexperiencing symptoms (r (34) = .38, p = .02) of PTSD. The association between the dissociation reported by children and the severity of hyperarousal symptoms of PTSD was found to be statistically non-significant (r (34) = .29, p = .09). Similar results were found with regards to caregiver reported dissociation being significantly correlated with PTSD severity (r (35) = .47, p = .01). However, for caregivers, dissociation was found to be significantly correlated with hyperarousal (r (35) = .46, p = .01) and avoidance symptoms of PTSD (r (35) = .44, p = .01), whereas the association between the degree of dissociation and the severity of reexperiencing symptoms was found to be statistically non-significant (r (35) = .31, p = .07).

The second part of the first hypothesis was that dissociation would be positively associated with the total number of psychological diagnoses. The current study assessed for three separate diagnostic conditions: Posttraumatic Stress Disorder (PTSD), Generalized Anxiety Disorder (GAD), and Separation Anxiety Disorder (SAD). With regards to both caregiver and child-reported symptoms, eleven children (28.9 % of the total sample) met full criteria for at least one disorder. However, caregiver and child-reported symptoms differed according to which diagnostic criteria were met. Children reported symptoms that met diagnostic criteria for PTSD ($n = 4$, 10.5%), slightly more often than caregivers ($n = 2$, 5.3%), whereas caregivers reported symptoms meeting criteria for Generalized Anxiety Disorder ($n = 8$, 21.1%), and Separation Anxiety Disorder ($n = 6$, 15.8%) slightly more often than children for these two disorders ($n = 4$, 10.5%; $n = 5$, 13.2% respectively).

With regards to both child and caregiver-reports, the majority of children ($n = 27$, 71.1%) did not meet full criteria for any of these disorders, no children met criteria for all three disorders, and very few participants met criteria for two disorders by either child ($n = 2$, 5.3%) or caregiver-report ($n = 5$, 13.2%). Therefore, for the purpose of this analysis, those meeting criteria for one and two disorders were collapsed into a single group and comparisons were made in both child and caregiver reported dissociation via two t-tests between the group with no diagnoses and the group with one or two diagnoses. Dissociation scores differed significantly between the "no diagnoses" and "one or more diagnoses" groups from both caregiver, $t\,(34) = -2.12$, $p = .04$, $\eta^2 = .12$, and child-report, $t\,(34) = -2.83$, $p = .01$, $\eta^2 = .19$, in that those children with one or more diagnoses, also had higher dissociation scores (see Table 3).

Hypothesis 2: Association Between Personal Characteristics and Dissociation

The second hypothesis stated that age would be negatively correlated with dissociation scores, while gender, household income, and ethnicity would not be significantly associated with dissociation. The means, standard deviations, and number of participants within each gender and ethnicity category are presented in Table 4. As predicted, there were no gender differences on child reported (t (34) = 1.74, p = .09, η^2 = .08) or caregiver reported (t (34) = .03, p = .97, η^2 =.00) dissociation. In examining the association of ethnicity and dissociation, the ethnicity groups of "Native American" and "Hispanic" were combined because of only a single participant within the "Hispanic" category. As predicted, the results of this analysis indicated that the ethnicity of children (i.e., Caucasian, African American, Native American/Hispanic) was not significantly associated with child reported, F (2, 33) = 1.73, p = .19, η^2 =.10, or caregiver reported, F (2, 33) = 2.16, p = .13, η^2 =.12, dissociation. Contrary to the hypothesized outcomes, the demographic variable of age was not significantly related to the degree of child reported (r (36) = .19, p = .26) or caregiver reported (r (36) = .08, p = .63) dissociative symptomology. However, the child's household income was significantly negatively correlated with both the child-report (r (31) = -.45, p = .01) and caregiver-report (r (31) = -.40, p = .03) of dissociation. In summary, within the current sample the personal characteristics of gender, ethnicity, and age were not significantly associated with either child or caregiver reported dissociation. However, the lower a child's household income, the more likely both caregivers and children were to report dissociative symptomology.

Hypothesis 3: Association Between Event Characteristics and Dissociation

Participants within the current sample experienced a wide variety of potentially traumatic events (see Figure 1). These included injuries from various types of accidents (n = 12), seeing others hurt or killed (n = 4), being in auto accidents or fires (n = 8), being sexually assaulted (n = 11), and being physically assaulted (n = 2). A total of 13 participants (35.1%) experienced an interpersonal traumatic event and 24 participants (64.9%) experienced a non-interpersonal traumatic event. The third hypothesis indicated that events of an interpersonal nature would be associated with an increase in dissociation. Although interpersonal events were associated with higher mean scores for both child and caregiver reported dissociation (M = 58.73, SD = 12.04; M = 7.43, SD = 6.24, respectively) than were non-interpersonal events (M = 51.50, SD = 9.92, M = 6.08, SD = 5.22, respectively), neither of these differences in child nor caregiver-report of dissociation were statistically significant (t (33) = 1.87, p = .07, η^2 = .10, t (33) = .69, p = .50, η^2 = .01, respectively). In addition to the interpersonal nature of the event, it was hypothesized that events of greater frequency would be associated with greater dissociation scores. Frequency of the ER event was measured by the total number of times that the child had experienced that same type of event (i.e., "1 time", "2 – 5 times", "6 – 9 times", "10 or more times"). Due to no children reporting "6 – 9 times" and only one child reporting "10 or more times", groups were collapsed into either "1 time" or "2 or more times" for these analyses. The means, standard deviations, and number of participants within both event-frequency categories are presented in Table 4. Results indicated that events of greater frequency were not associated with a significantly greater amount of dissociative symptoms by either child (t (33) = .85, p = .40, η^2 = .02) or

caregiver-report (t (33) = 3.69, p = .06, η^2 = .10). Hence, neither the interpersonal nature of the event, nor the frequency with which it had occurred were significantly associated with dissociative symptomology.

Hypothesis 4: Caregiver Characteristics and Social Support

The fourth hypothesis indicated that greater caregiver emotional reaction to the traumatic event would be associated with greater dissociation scores. In addition, it specified that several other caregiver characteristics would be associated with increased dissociation in children, including fewer caregivers in the household, a more distant demographic relationship between the caregiver(s) and the child, and a lower educational level of the caregiver(s). Because of small group sizes within several caregiver-characteristic categories, groups were collapsed on some variables. Data indicated that within this study either a single woman or a woman and man headed all households. There were no households with two-men or two-women heading them. Therefore, the characteristics of caregivers' demographic relationship to the child, and caregivers' educational level were available for each primary female caregiver, and primary male caregiver when one was indicated. Within the variable of caregiver(s) demographic relationship to child, the categories of "step-mother/step-father", "life-partner", "grandma/grandpa", "aunt/uncle", "cousin", and "kinship foster care" were combined, leaving two categories for each caregiver: "mother/father" and "other". Within the variable of educational level, the categories of "less than 7th grade", "9th grade", and "11th grade" were collapsed, as were the categories of "partial college", "college graduate", and "graduate professional training" leaving three categories for each caregiver: "less than

high school graduate", "high school graduate", and "some college or more". The original numbers of caregivers within each of these categories are reported in Table 5.

Four separate ANOVAs were utilized to examine the association between male and female caregiver education and child and caregiver reported dissociation. Results indicated that neither the male caregiver's educational level (F (2, 17) = 1.21, p = .32, η^2 = .13; F (2, 17) = .43, p = .66, η^2 = .05) nor the female caregiver's educational level (F (2, 33) = .35, p = .71, η^2 = .02; F (2, 33) = .06, p = .94, η^2 = .01) was significantly associated with amount of dissociative symptomology reported by the child or the caregiver, respectively. Furthermore, results of independent samples t-tests indicated that the demographic relationship of the female caregiver (t (34) = .04, p = .97, η^2 = .00; t (34) = -.80, p = .43, η^2 = .02), and the number of caregivers in the home (t (34) = -.74, p = .47, η^2 = .02; t (34) = .76, p = .45, η^2 = .02) were also not significantly associated with the amount of dissociation reported by the child or caregiver, respectively. Results also indicate that the demographic relationship of the male caregiver to the child (t (22) = -.74, p = .47, η^2 = .02) was not associated with child reported dissociation, but was significantly associated with caregiver reported dissociation (t (22) = -2.02, p = .05, η^2 = .16). That is, the primary female caregiver was more likely to report dissociative symptoms in the child if the male caregiver in the household was not the child's biological father. The means, standard deviations, and number of participants within each education, demographic relationship, and number of caretaker category are presented in Table 4.

Finally, results of correlational analyses indicated that the emotional reaction of the primary female caregiver to the traumatic event, as measured by the PERQ, was

significantly correlated to caregiver reported dissociation, r (36) = .32, p = .05; and there was a trend toward higher levels of caregiver emotional reaction being associated with higher levels of child reported dissociation, r (36) = .30, p = .07. In summary, the personal characteristic of household income was a statistically significant predictor of both child and caregiver reported dissociation scores. While the demographic relationship of the male caregiver to the child and the primary caregiver's emotional reaction to the traumatic event were significantly associated with caregiver reported dissociation. No other personal, event, or caregiver characteristic was significantly associated with dissociation scores.

Hypothesis 5: Independent Contribution of Each Predictor to Dissociation

Because only one proposed predictor variable, child's household income, was significantly associated with child reported dissociative symptoms, no further analyses were necessary for this variable. However, three predictor variables (i.e., child's household income, PERQ, and male caregiver's demographic relationship to the child) were significantly associated with caregiver reported dissociative symptoms, and warrant further analysis. A single hierarchical multiple regression was conducted with household income and caregiver characteristics (i.e., PERQ, male caregiver's demographic relationship to the child), entered respectively in separate blocks, predicting caregiver reported dissociation. Within this analysis, male caregiver's demographic relationship to the child was recoded to include father and non-father relationships as well as those households without a male caregiver. This was done to retain all subjects within this analysis. Household income accounted for a significant amount of unique variance in dissociation at step 1; however, male caregiver's demographic relationship to the child

and the PERQ did not account for a significant amount of unique variance at step 2. (see Table 6).

Hypothesis 6: Relationship of the Perpetrator to the Child

The current study hypothesized that for events of an interpersonal-nature, a closer relationship of the perpetrator to the victim would be associated with greater symptoms of dissociation than would a more distant relationship. Thirteen children experienced interpersonal traumatic events perpetrated by individuals with various relationships to the child, including parent/step-parent ($n = 3$, 7.9%), other relative ($n = 3$, 7.9%), casual acquaintance ($n = 4$, 10.5%), and no relationship ($n = 3$, 7.9%). Because of the small number of participants within each category, the categories of "parent/step-parent" and "other relative" were combined, as were the categories of "casual acquaintance" and "no relationship". The means, standard deviations, and number of participants within perpetrator categories are presented in Table 4. Results of two independent samples t-tests indicated that the relationship of the perpetrator was not significantly associated with either the caregiver-report ($t(11) = -1.46, p = .17, \eta^2 = .16$), or child-report of dissociation ($t(9) = 2.15, p = .06, \eta^2 = .34$).

Hypothesis 7: Modified Stroop Procedure

It was proposed that after controlling for PTSD symptomology, increased dissociation scores would be associated with longer MSP latencies for trauma related words. To test this hypothesis, two separate hierarchical multiple regressions were conducted (see Table 7) with PTSD symptom severity and dissociative symptoms, entered respectively in separate blocks, predicting MSP (trauma latency minus neutral latency). For child reported symptomology, PTSD symptom severity did not account for a

significant amount of unique variance in MSP latency at step 1, and dissociation did not account for a significant amount of additional unique variance at step 2. Oddly enough, this near-significant result is in the opposite direction to what was originally predicted, with high dissociators being somewhat less likely to produce longer latencies for trauma related words on the MSP. Results for caregiver reported symptomology were similar with PTSD symptom severity not accounting for a significant amount of unique variance in MSP latency at step 1, and dissociation not accounting for a significant amount of additional unique variance at step 2. However, within this analysis the ability of caregiver-reported dissociation to predict Stroop latency did not approach statistical significance.

CHAPTER V

DISCUSSION

This study was the first to assess the development of dissociation in a sample of children experiencing traumatic events of varying type, and to examine the association of dissociative symptoms and Modified Stroop Procedure (MSP) performance in children. Findings from this study add to what is known of the development and utility of dissociative processes and also to the literature on children's adaptation following traumatic life events. The results also demonstrate that the development of dissociation is a complex process, and that these phenomena have an equally complicated function.

Summary of Results

Results of this study confirm previous findings from samples of children (Putnam et al., 1995; Rossman et al., 1997), that dissociation, reported here by both caregivers and children, is related to symptoms of PTSD. In addition, findings from the adult literature that dissociation is specifically associated with the avoidant symptoms of PTSD (Griffin, et al., 1997; Marmar et al., 1994) were confirmed via both child and caregiver-reports. Results also confirmed the findings of Chu and Dill (1990) that dissociation was positively associated with the total number of psychological diagnoses. That is, those children without the diagnosis of SAD, GAD, or PTSD had lower dissociation scores than those children meeting full criteria for one or more of these diagnoses. However, because of the cross-sectional nature of this study, it is impossible to say whether those children with preexisting conditions were at increased risk for having higher levels of

dissociation, or if children who had increased symptoms of dissociation following their traumatic event were in danger of developing a wide variety of additional symptomology.

Second, the involvement of several child, caregiver, and event characteristics were examined for their involvement in the development of dissociation in children. With regards to child-characteristics, it was hypothesized that age would be negatively correlated with dissociation scores, while gender, household income, and ethnicity would not be significantly associated with dissociation. Results indicated that there were no gender or ethnicity differences on child or caregiver reported dissociation. These results were in concurrence with previous findings regarding gender (Berstein & Putnam, 1986; Irwin, 1999; Ross et al., 1990; Sanders et al., 1989); however, they deviate from two studies with tentative evidence that the prevalence of dissociative symptoms may differ across certain cultural groups (Kulka et al., 1990; Modestin, et al., 1996). The child's age was also not significantly related to the degree of child or caregiver reported dissociative symptomology. Although these results are contrary to the findings of previous research utilizing samples of adults (Irwin, 1994, 1999; Ross, et al., 1990; Ross et al., 1989; Torem, et al., 1992; Zatzick, 1994), they correspond with one recent study utilizing a sample of adolescents that found age to be unrelated to level of dissociative symptomology (Brunner et al., 2000). It is possible that within samples of children who have experienced a recent trauma, that psychological absorption has little effect on the measurement of post-traumatic dissociative symptomology. One characteristic that was significantly negatively correlated with both child and caregiver-report of dissociation was household income. This finding was very surprising given that previous studies have found no link between dissociative symptoms and socioeconomic status (Modestin et al.,

1996; Ross et al., 1990). Nevertheless, it is possible that caregivers with lower household incomes may be less supportive of their children. Another possible explanation for these results may be that Modestin et al. and Ross et al. were investigating dissociation within samples of adults, and the effects of lowered income may be very different on children than on adults. For example, unlike adults, children may lack the cognitive resources to cope with the impact of a lower household income, and thus be more severely affected by it. It may also be that households that lack financial resources are not able to provide their children with the same level of support that other children may receive.

In accordance with previous research, it was hypothesized that events of an interpersonal nature and events that occurred with greater frequency would be associated with an increase in dissociation (Spiegel & Cardeña, 1991; Fletcher, 1994). Although there was a trend for the interpersonal nature of the event to be associated with child reported dissociation, and for the frequency of the event to be associated with caregiver reported dissociation, neither of these associations was statistically significant. After finding a medium to large effect size for these near-significant results (Cohen's $d = .65$, .67, respectively), a power analysis utilizing the computer program G*Power (Faul, & Erdfelder, 1992) was completed. This analysis was conducted to test for the number of participants that would have been needed to see this effect at a minimum acceptable power of .80. Results indicated that having 76 participants within the analysis of interpersonal nature of the event and 78 participants within the analysis of the frequency of the event would have made these findings statistically significant (Table 8).

Findings regarding characteristics of the caregiver indicate that neither the male or female caregiver's educational level (i.e., less than high school graduate, high school

graduate, some college or more), the demographic relationship of the female caregiver to the child (i.e., biological mother, other), nor the number of caretakers in the home were significantly associated with the amount of dissociation reported by the child or caregiver. However, the demographic relationship of the male caregiver to the child (i.e., biological father, other) was significantly associated with caregiver-report of dissociation, but not with child-reported dissociation. That is, the primary female caregiver was more likely to report dissociative symptoms in the child if the male caregiver in the household was not the child's biological father. Results also indicated that the emotional reaction of the primary female caregiver to the traumatic event was positively related to caregiver reported dissociation; and there was a trend toward higher levels of caregiver emotional reaction being associated with higher levels of child-reported dissociation. After finding a small to medium effect size for caregiver emotional reaction and child reported dissociation (r (36) = .30, p = .07), a power analysis was completed to test for the number of participants that would have been needed to see this effect at a minimum acceptable power of .80. Results indicated that having 82 participants would have made these findings statistically significant (Table 8). These results, although somewhat weak in magnitude, are consistent with previous research indicating that lower levels of parental distress are related to lower levels of reported dissociative symptoms for children (Cohen & Mannarino, 1996; Holden & Ritchie, 1991).

When entering the variables of child's household income, demographic relationship of the male caregiver to the child, and PERQ scores into an equation predicting level of caregiver-reported dissociation, findings indicated that the male caregiver's demographic relationship to the child and PERQ scores did not predict a significant additional amount

of variance in dissociation scores after first accounting for the variance due to household income. In addition, after other variables were entered into this equation, household income lost its ability to predict a significant amount of unique variance in dissociation. Thus, although these predictors were individually related with the caregiver-report of dissociation, once they were all in the regression equation, no predictor was significant. There are several possibilities for why this occurred. First, it may be that the overlap between predictors overlapped with dissociation. However, collinearity diagnostics did not indicate this to be so. A more plausible explanation then is that these results are due to a third variable not measured in the present study that is associated with dissociation and the predictor variables. For instance, children living in lower-income households may be at an increased risk for higher severity events (which was not assessed here), which may in turn also lead to greater emotional reactions. It could also be that children in lower income households have fewer resources with which to combat posttraumatic symptomology, and that these important resources were not included within this study.

Lastly, findings indicated that for both child and caregiver-reported symptomology, PTSD symptom severity did not account for a significant amount of unique variance in MSP latency, and dissociation did not account for a significant amount of additional unique variance. These findings are contrary to previous studies that have indicated slower color-naming latencies for children with a diagnosis of PTSD vs. controls (Dubner & Motta, 1999; Moradi et al., 1999). However, one previous study found no differences in the latencies for color-naming between sexually abused girls with and without PTSD diagnoses and controls (Freeman & Beck, 2000). These authors hypothesized that their lack of findings may have been related to children not having as much experience with

the use of "taboo" abuse-related words used as stimuli in their Stroop task. Within the current study, Stroop trauma-related words were chosen for their applicability to most children's experience of trauma. However, in doing so we may have made the trauma-related words too general and not specific enough to the children's traumatic events. Therefore, similar to Freeman and Beck's (2000) problems with utilizing "taboo" abuse-related words, our trauma-stimuli for the Stroop may not have been specific enough to create increased latencies in those who would have had greater difficulty with trauma-related cues if the stimuli would have been more personally relevant.

Methodological Considerations and Limitations

There are a number of limitations within the current study that should be addressed within future research. First, because of the cross sectional design of this study, questions of causality could not be addressed within analyses when such issues were relevant (i.e., factors affecting the development of dissociation). However, this is often a limitation of this type of research as pre-traumatic event measures of children's functioning are rarely available for comparison with post-event behavior. Second, although a number of child, caregiver, and event characteristics were assessed in this study, it is difficult to know what affect additional factors might have on dissociation scores. For example, the impact of household income on dissociation scores may have been due to the interaction of a third variable not assessed here. Third, this study lacked a comparison group of children who had not recently experienced a traumatic life event. Such a comparison group would have made further comparisons to previous studies utilizing homogeneous trauma samples and comparison groups possible. Fourth, this study attempted to find differences in Stroop color-naming latencies within a heterogeneous sample of trauma victims. In

doing so, it was demonstrated how vital it is for Stroop stimuli to be emotionally salient to the individual. This task becomes more difficult, when those within the sample have experienced a wide range of traumatic experiences. Finally, because of the limited number of participants within this study, many categorical groups needed to be collapsed to perform analyses. It is possible that this collapsing of groups may have biased or nullified the results of these analyses.

Clinical Implications

In addition to the theoretical implications discussed earlier, the results of the current study have implications for the clinical realm as well. First, differences between caregiver's and children's report of dissociative and PTSD symptoms found in this study confirm the importance of interviewing children, and not just caregivers, regarding their psychological reactions following traumatic events (Terr, 1979; Lobovits & Handal, 1985; Reich & Earls, 1987; Nader & Pynoos, 1989; Weissman et al., 1987). Although the more objective report of overt symptoms by caregivers is invaluable to the assessment of children, it is equally important to have the child's report of his or her covert, subjective experiences.

Second, the results of this study confirm a relationship between PTSD and dissociative symptomology within a sample of children experiencing a diversity of traumatic events. Thus, the link between PTSD and dissociation is not specific to any one type of trauma, but instead appears to be pervasive across traumatic life experiences. In addition, children within the current study who were experiencing dissociative symptoms were also more likely to experience other forms of psychopathology. Therefore, children experiencing difficulties following traumatic life events may benefit from an in depth

assessment of their overall psychological functioning.

Third, the most stable predictor of dissociate symptoms within this study was household income. Although the relationship of income to dissociation appears to be due to their mutual association with other variable(s) not evaluated here, it does appear as though children from lower income households may be at an increased risk for exhibiting more serious pathology following traumatic life events. In this way, household income, as well as other potential demographic characteristics, may serve as indicators for those who may need additional services following potentially traumatic events.

Finally, it has previously been suggested that measuring dissociation may help to identify cognitive avoidance strategies in children following traumatic events (Carlson, 1997). However, the use of the MSP in determining the avoidant function of dissociative symptoms in children was not confirmed here. Further information regarding the function of dissociation in children is needed before measures of dissociation could be considered valid indicators of posttraumatic avoidant symptoms.

Conclusions and Considerations for Further Research

Overall this study confirmed a moderate positive relationship between dissociation, and PTSD, avoidance symptoms of PTSD, and total number of diagnoses. These findings give credence to the role of dissociation in the development of pathological responses following traumatic life events. However, several hypotheses regarding personal, event, and caregiver characteristics, which may be involved in the development of dissociation, were not fully supported. Previous findings regarding the association of age and dissociation were not supported here. Also, the event characteristics of frequency and interpersonal-nature were not found to be significantly associated with dissociation;

however, with a larger sample size this effect may have been significant. Future studies should attempt to obtain a larger sample size to account for this problem.

Findings regarding personal, event, and caregiver characteristics indicate that the relationship between these variables and the development of dissociation is quite complex. Although several of these characteristics appeared to be related to dissociation individually (i.e., household income, relationship of the male caregiver to the child, emotional reaction of the primary female caregiver), regression analysis indicated that their relationship with dissociative symptoms was most likely due to their association with another variable(s) not evaluated here. It is evident that there are many aspects of the child and his/her environment that impact the development of dissociation following traumatic events, and that the relationships among these variables and dissociation must continue to be evaluated.

With regards to caregiver characteristics, only simple demographic characteristics and the emotional reaction of the primary female caregiver were assessed within this study. Future studies should attempt to assess for a broader range of variables associated both with the impact of the traumatic events on all primary caregivers and the quality of the relationships between children and their caregivers. In this way, characteristics of the caregiver that may affect their relationship with the child and ability to provide support should continue to be addressed in future research.

Finally, previous findings regarding the association of dissociation and MSP performance were not replicated within our heterogeneous-trauma sample. Future studies should attempt to validate the use of the MSP in more homogeneous samples of children. If future attempts are made to examine the Stroop effect within heterogeneous trauma

samples, efforts should be made to develop Stroop stimuli that significantly address aspects of multiple types of traumatic events while remaining emotionally salient to individuals.

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APPENDIXES

APPENDIX A

REFERRAL SCRIPT

Referral Script

Hi, my name is (insert name). I am part of the pediatric psychology staff here at Children's Hospital. I work for a program called HOPES, which stands for Helping Oklahomans Prevent Emergency Stress-reactions. Our staff is contacted every time a child or teenager who has experienced a trauma comes into the ER. They do this because we know that about 1/3 to 1/2 of children who experience or witness traumas may develop symptoms later on (such as nightmares, aggressive behavior, changing in eating habits, school problems, emotional symptoms). So, to help kids who have experienced traumas, we have developed this program to help kids make healthy adjustments after their experiences. We are also trying to prevent any of these possible symptoms from developing later on.

Would it be all right if I talked to you about our program? Also, please feel free to stop me and ask any questions you have along the way.

If yes, proceed. If no, then give referral.

HOPES is a research program. It's designed to help us understand the best ways to help kids who have been through scary or life-threatening experiences. Our goal is to help children & their families who are adjusting to these events. And, all of our interventions are safe and have been used with children before. We also know that these types of prevention programs have helped kids get back into their normal, daily routines a bit quicker. The HOPES program wants to find out what helps kids the most. So, we would like to invite you to participate in our free program. And, to thank you for helping us figure this out, we also want to pay you for your time.

Do you think you might be interested in something like this?

If no:

> Thank you for your time. I would like to give you this referral sheet. It has a list of local agencies that can help children who may be having problems adjusting after experiencing a trauma.

If yes:

> Great! What I would like you to do is read this consent form which gives you a lot more details about our program. If after reading this, you want to participate, then fill out the form & sign the last page. Then, I will schedule you for your first appointment. I am also happy to answer any of your questions.

If can't read it or not sure, then say:

> That's fine. I know this is a really hectic time right now and I don't want to inconvenience you. If you don't want to read it right now, then you can take the form with you and read it later. However, if you would be willing to give me some contact information, then I will have someone from our program follow up with you tomorrow.

APPENDIX B

CONSENT / ASSENT FORMS AND MINOR ASSENT SCRIPT

INFORMED CONSENT FORM - CAREGIVER

UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER
Helping Oklahomans Prevent Emergency Stress-reactions (HOPES)
Prevention of PTSD Through Immediate Intervention Following Trauma
Sharon M. Simpson, Ph.D.

This is a clinical research outcome study (a type of research study). Clinical treatment outcome studies include only patients who choose to take part in them. Please take your time to make your decision. Discuss this with your family and friends.

You are being asked to take part in this study because the child you are taking care of was either involved in or witnessed a traumatic event.

Why is this study being done?

The purpose of this study is to further the understanding of ways to help children who have experienced traumatic events by comparing three intervention programs. This research is being done because we do not know which of these programs works best for helping children.

What is the status of the procedures involved in this study?

All procedures have been used safely with children. There are no drugs involved in this study.

How many people will take part in the study?

About 120 children and their caregivers will take part in this study. About 120 of these children will be recruited at this location.

What is involved in the study?

You and the child you are taking care of (hereafter referred to you as your child) will be interviewed and will complete several standard paper and pencil questionnaires and psychological tests, and several physiological measures will be taken of your child (heart rate and skin conductance). The interviews, questionnaires, and tests will ask about the specific details of the traumatic event, as well as any specific symptoms your child may have, and feelings you have about the event and your child. The assessment will require approximately 2 hours of your time. If your child attends school, the teacher will be asked to complete a measure of your child's behavioral and emotional adjustment. The questionnaire sent to the teacher will not tell the teacher anything about this project or why you and your child are participating. The complete evaluation will occur at three times: a) before intervention begins, b) five weeks after the first evaluation, and c) three months after the second evaluation.

After the intake interview, you and your child will be randomized to receive one of three interventions. Randomization means that you are put in a group by chance. It is like flipping a coin or rolling dice. All three of these interventions are designed to be helpful, but we don't know which one is best for any given family.

Two of the interventions will be conducted at Children's Hospital of Oklahoma. One of these interventions focuses on teaching the children and their caregivers specific ways to think about

the event while the second intervention focuses on helping the child talk about and process the event. Both of these interventions include the caregiver. The first intervention consists of 4 sessions each for about 90 minutes; the second intervention consists of 2 sessions each for about 90 minutes. These two interventions are provided at the Children's Hospital of Oklahoma and will be provided by faculty, staff, and advanced students/trainees at the University of Oklahoma Health Sciences Center. Both interventions and all evaluations will be supervised by the faculty members, Drs. Sharon M. Simpson and Jane F. Silovsky. The third intervention will consist of a referral to a community agency that provides intervention to children.

In order to closely monitor any symptoms your child may be having, both you and your child will be asked to fill out a monthly rating form asking about the presence and frequency of specific symptoms. You will be contacted either by phone or by mail to provide your responses on these forms. You and your child will be asked to do these rating forms on a monthly basis for the duration of the study (approximately 4 months).

How long will I be in the study?

We think you will be in the study for about 4 months.

The researcher may decide to take you off the study if you or your child need additional services or if she feels that it is in your best interest.

You can stop participating in this study at any time. However, if you decide to stop participating in the study, we encourage you to talk to the researcher and your child's regular doctor first.

What are the risks of the study?

There are no known risks (dangers) to you or to your child from being in this research study except for possibly feeling a little uncomfortable when answering some questions or talking about personal matters with program staff. These feelings are usually temporary and do not last long.

If any information is provided that suggests that a child may have been neglected or abused, this information may have to be reported to the Department of Human Services, as is required by Oklahoma State Statute.

If subpoenaed by a judge, information from the evaluation and intervention may have to be disclosed to the court.

Are there benefits to taking part in the study?

Your participation in this research study may help you and your child better cope with the traumatic event and may result in fewer long-term negative psychological effects following the traumatic event.

What other options are there?

Instead of being in this study, you have these options:

- You may choose not to participate in the study

- You may choose to seek out treatment in the community

Please talk to your child's regular doctor about these and other options.

What about confidentiality?

Efforts will be made to keep your personal information confidential. All test data, reports, and forms will be maintained in locked files in the Department of Pediatrics at OUHSC and will be treated as confidential. You will not be identifiable by name or description in any reports or publications about this study. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law.

There are organizations that may inspect and/or copy your research records for quality assurance and data analysis. These organization include the sponsor of the study (Children's Medical Research Institute) and the OUHSC Institutional Review Board.

What are the costs?

All services provided by the project are free to participants, there are no charges for the evaluations or the intervention.

Will I be paid for participating in the study?

Your family will be paid $20 to compensate you for your time for each of the three evaluations.

What if I am injured or become ill while participating in this study?

In the case of injury or illness resulting from this study, emergency medical treatment is available. However, you or your insurance company may be expected to pay the usual charge for this treatment. No funds have been set aside by The University of Oklahoma Health Sciences Center, the Children's Hospital, or the Children's Medical Research Institute to compensate you in the event of injury.

What are my rights as a participant?

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. If you decide to take part and then decide against it, you can withdraw for any reason. However, at certain times during the treatment, it may be dangerous for you to withdraw, so please be sure to discuss leaving the study with the principal investigator (Dr. Sharon Simpson) or your child's regular physician. Leaving the study will not result in any penalty or loss of benefits that you would otherwise receive.

We will tell you about any new information that may affect your health, welfare, or willingness to stay in this study.

Whom do I call if I have questions or problems?

If you have questions about the study or have a research-related injury, contact the Principal Investigator Dr. Sharon M. Simpson at (405) 271-8858 from Monday through Friday, 8 a.m. to 5

p.m. or call the Children's Hospital operator at (405) 271-3636 and ask for Dr. Simpson to be paged. You may also leave a message after hours or on weekends at (405) 271-8858 and your phone call will be returned.

For questions about your rights as a research subject, contact Patricia Benton, Ph.D., the Interim Director of the Office of Research Administration at (405) 271-2090.

Signature:

By signing this form, you are agreeing to participate in this research study under the conditions described. You have not given up any of your legal rights or released any individual or institution from liability for negligence. You have been given an opportunity to ask questions. You will be given a copy of this consent document.

I agree to participate in this study:

Name of Child	Date
Signature of Caregiver	Date
Witness	Date
Principal Investigator	Date

****

RECRUITER OR INTERVIEWER STATEMENT

I have gone over this consent form with the above participant(s). In my judgement, they appear to have understood what they have read, or have had read to them if they were unable to read. I have personally witnessed their signatures on this form.

Date	Signature

INFORMED CONSENT FORM – GUARDIAN AND CHILD

UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER
Helping Oklahomans Prevent Emergency Stress-reactions (HOPES)
Prevention of PTSD Through Immediate Intervention Following Trauma
Sharon M. Simpson, Ph.D.

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After the intake interview, you and your child will be randomized to receive one of three interventions. Randomization means that you are put in a group by chance. It is like flipping a coin or rolling dice. All three of these interventions are designed to be helpful, but we don't know which one is best for any given family.

Two of the interventions will be conducted at Children's Hospital of Oklahoma. One of these interventions focuses on teaching the children and their caregivers specific ways to think about the event while the second intervention focuses on helping the child talk about and process the

event. Both of these interventions include the caregiver. The first intervention consists of 4 sessions each for about 90 minutes; the second intervention consists of 2 sessions each for about 90 minutes. These two interventions are provided at the Children's Hospital of Oklahoma and will be provided by faculty, staff, and advanced students/trainees at the University of Oklahoma Health Sciences Center. Both interventions and all evaluations will be supervised by the faculty members, Drs. Sharon M. Simpson and Jane F. Silovsky. The third intervention will consist of a referral to a community agency that provides intervention to children.

In order to closely monitor any symptoms your child may be having, both you and your child will be asked to fill out a monthly rating form asking about the presence and frequency of specific symptoms. You will be contacted either by phone or by mail to provide your responses on these forms. You and your child will be asked to do these rating forms on a monthly basis for the duration of the study (approximately 4 months).

How long will I be in the study?

We think you will be in the study for about 4 months.

The researcher may decide to take you off the study if you or your child need additional services or if she feels that it is in your best interest.

You can stop participating in this study at any time. However, if you decide to stop participating in the study, we encourage you to talk to the researcher and your child's regular doctor first.

What are the risks of the study?

There are no known risks (dangers) to you or to your child from being in this research study except for possibly feeling a little uncomfortable when answering some questions or talking about personal matters with program staff. These feelings are usually temporary and do not last long.

If any information is provided that suggests that a child may have been neglected or abused, this information may have to be reported to the Department of Human Services, as is required by Oklahoma State Statute.

If subpoenaed by a judge, information from the evaluation and intervention may have to be disclosed to the court.

Are there benefits to taking part in the study?

Your participation in this research study may help you and your child better cope with the traumatic event and may result in fewer long-term negative psychological effects following the traumatic event.

What other options are there?

Instead of being in this study, you have these options:

- You may choose not to participate in the study
- You may choose to seek out treatment in the community

Please talk to your child's regular doctor about these and other options.

What about confidentiality?

Efforts will be made to keep your personal information confidential. All test data, reports, and forms will be maintained in locked files in the Department of Pediatrics at OUHSC and will be treated as confidential. You will not be identifiable by name or description in any reports or publications about this study. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law.

There are organizations that may inspect and/or copy your research records for quality assurance and data analysis. These organization include the sponsor of the study (Children's Medical Research Institute) and the OUHSC Institutional Review Board.

What are the costs?

All services provided by the project are free to participants, there are no charges for the evaluations or the intervention.

Will I be paid for participating in the study?

Your family will be paid $20 to compensate you for your time for each of the three evaluations.

What if I am injured or become ill while participating in this study?

In the case of injury or illness resulting from this study, emergency medical treatment is available. However, you or your insurance company may be expected to pay the usual charge for this treatment. No funds have been set aside by The University of Oklahoma Health Sciences Center, the Children's Hospital, or the Children's Medical Research Institute to compensate you in the event of injury.

What are my rights as a participant?

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. If you decide to take part and then decide against it, you can withdraw for any reason. However, at certain times during the treatment, it may be dangerous for you to withdraw, so please be sure to discuss leaving the study with the principal investigator (Dr. Sharon Simpson) or your child's regular physician. Leaving the study will not result in any penalty or loss of benefits that you would otherwise receive.

We will tell you about any new information that may affect your health, welfare, or willingness to stay in this study.

Whom do I call if I have questions or problems?

If you have questions about the study or have a research-related injury, contact the Principal Investigator Dr. Sharon M. Simpson at (405) 271-8858 from Monday through Friday, 8 a.m. to 5 p.m. or call the Children's Hospital operator at (405) 271-3636 and ask for Dr. Simpson to be

paged. You may also leave a message after hours or on weekends at (405) 271-8858 and your phone call will be returned.

For questions about your rights as a research subject, contact the Director of Research Administration at (405) 271-2090.

Signature:

By signing this form, you are agreeing to participate in this research study under the conditions described. You have not given up any of your legal rights or released any individual or institution from liability for negligence. You have been given an opportunity to ask questions. You will be given a copy of this consent document.

I agree to participate in this study:

Name of Child	Date
Signature of Legal Guardian	Date
Principal Investigator	Date

****

MINOR'S ASSENT

This study has been explained to me and I voluntarily agree to be a participant. I have had a chance to ask questions. I have read the consent form or had it explained to me and I understand what it means and what I am supposed to do. I am agreeing to be in the study.

Date	Minor's Signature

****

RECRUITER OR INTERVIEWER STATEMENT

I have gone over this consent form with the above participant(s). In my judgement, they appear to have understood what they have read, or have had read to them if they were unable to read. I have personally witnessed their signatures on this form. I have explained the study to the minor participant named above in language appropriate to his age and level of understanding. The minor participant has been given the opportunity to ask questions and to decide about participating. The signature of the guardian and myself certifies that the minor is agreeing to participate in this study.

Date	Signature

Minor Assent Script

You are being asked to be part of the HOPES program because of what happened to you. We work with kids who have had something scary happen to them to help make sure that they feel okay. We help kids in three different ways, and we want to see what is the *best* way help kids. There are two parts to this program, the first part will start today and the second part will start next week.

In the first part, you and (female caregiver) will answer questions either by telling us your answers or by writing your answers down. These questions will ask about a bunch of different things including the scary thing that happened to you, and how you are thinking and feeling about that now. You will be asked these questions a total of three times, once today and then again in six weeks and again in three months. This will take about 2 hours each time and you'll get paid $20 each time.

In the second part of the study, you will either talk to a counselor from our program about what happened to you, or we will help you find another counselor who can talk to you about what happened. If you see a counselor here, they will teach you ways to think about the event so it doesn't scare you, or they will help you talk about what happened to you.

You don't have to be in this program and you can stop coming to the HOPES program at any time. We don't think this program can hurt you, but it may be hard to talk about what happened to you. We do hope that this program helps you and (female caregiver) deal with what happened to you.

Everything that you tell me or other HOPES staff will be kept "confidential," that means secret. However, if you tell us about someone who has been hurt by someone else or is thinking of hurting themselves we may have to report that information to make sure that those people are safe.

Do you have any questions about what I just told you? OK. By signing this form, you are agreeing to be part of the HOPES program.

APPENDIX C

ASSESSMENT MEASURES

Instructions: Please read each sentence and circle the number that best describes how often you feel this way.

1 Never	2 Sometimes	3 Often	4 Almost Always

1. When I'm awake, I feel like I'm dreaming.	**1**	**2**	**3**	**4**
2. I'm grouchy, but I don't mean to be.	**1**	**2**	**3**	**4**
3. I cannot sit still.	**1**	**2**	**3**	**4**
4. I am hungry.	**1**	**2**	**3**	**4**
5. When I start laughing, I cannot stop.	**1**	**2**	**3**	**4**
6. When I'm tired, I do things without thinking.	**1**	**2**	**3**	**4**
7. I forget what I am supposed to do.	**1**	**2**	**3**	**4**
8. I don't like to be at school.	**1**	**2**	**3**	**4**
9. I eat even when I am not hungry.	**1**	**2**	**3**	**4**
10. I think I want to write, but my hand does not want to.	**1**	**2**	**3**	**4**
11. I love my friends, but I hate them, too.	**1**	**2**	**3**	**4**
12. I play many games all at the same time.	**1**	**2**	**3**	**4**
13. I steal things, but I don't want to.	**1**	**2**	**3**	**4**
14. When someone calls me, I don't recognize my name.	**1**	**2**	**3**	**4**
15. My feelings change, but I don't want them to.	**1**	**2**	**3**	**4**
16. I do not remember what people tell mw.	**1**	**2**	**3**	**4**
17. I don't know how I got to school.	**1**	**2**	**3**	**4**

18. I hide my thought from others.	**1**	**2**	**3**	**4**
19. After I hit someone, I wish I hadn't.	**1**	**2**	**3**	**4**
20. I have an imaginary friend.	**1**	**2**	**3**	**4**
21. I think about everything I do.	**1**	**2**	**3**	**4**
22. I cannot stop myself from crying.	**1**	**2**	**3**	**4**
23. I open my eyes and see I am in a strange place.	**1**	**2**	**3**	**4**
24. I want to play and I want to read and I cannot decide.	**1**	**2**	**3**	**4**
25. I'm angry, but I don't want to be.	**1**	**2**	**3**	**4**
26. I cannot stop my thoughts, but I would like to.	**1**	**2**	**3**	**4**
27. My mind cannot stop my body from doing things I don't' want it to do.	**1**	**2**	**3**	**4**
28. I feel like I'm somebody else watching me.	**1**	**2**	**3**	**4**

CHILD DISSOCIATIVE CHECKLIST
(V 3.0 - 2/90)

Below is a list of behaviors that describe children. For each item, rate how true it is of your child **NOW** or **WITHIN THE PAST 12 MONTHS.**

			0	**1**	**2**
			NOT TRUE	SOMETIMES TRUE	VERY TRUE
0	**1**	**2**	1. **Child does not remember or denies traumatic or painful experiences that are known to have occurred.**		
0	**1**	**2**	2. **Child goes into a daze or trance-like state at times or often appears "spaced-out"** (teachers may report that he or she 'daydreams' frequently in school).		
0	**1**	**2**	3. **Child shows rapid changes in personality** (child may go from being shy to being outgoing, from feminine to masculine, from timid to aggressive).		
0	**1**	**2**	4. **Child is unusually forgetful or confused about things that he or she should know** (child may forget the names of friends, teachers or other important people, loses possessions, or gets lost easily).		
0	**1**	**2**	5. **Child has a very poor sense of time** (child loses track of time, may think that it is morning when it is actually afternoon, gets confused about what day it is, or becomes confused about when something happened).		
0	**1**	**2**	6. **Child shows marked day-to-day or even hour-to-hour variations in his or her skills, knowledge, food preferences, or athletic abilities** (changes in handwriting, memory for previously learned information such as multiplication tables, spelling, use of tools, or artistic ability).		
0	**1**	**2**	7. **Child shows rapid regressions in age-appropriate behavior** (a twelve year-old starts to use baby-talk, sucks thumb or draws like a four year-old).		
0	**1**	**2**	8. **Child has a difficult time learning from experience** (explanations, normal discipline or punishment do not change child's behavior).		

0 1 2 9. **Child continues to lie or deny misbehavior even when the evidence is obvious.**

0 1 2 10. **Child refers to him or herself in the third person (e.g., as she or her) when talking about self, or at times insists on being called by a different name. He or she may also claim that things that he or she did actually happened to another person.**

0 1 2 11. **Child has rapidly changing physical complaints such as headache or upset stomach** (child may complain of a headache one minute and seem to forget all about it the next).

0 1 2 12. **Child is unusually sexually precocious and may attempt age-inappropriate sexual behavior with other children or adults.**

0 1 2 13. **Child suffers from unexplained injuries or may even deliberately injure self at times.**

0 1 2 14. **Child reports hearing voices that talk to him or her** (the voices may be friendly or angry and may come from 'imaginary companions' or sound like the voices of parents, friends or teachers).

0 1 2 15. **Child has a vivid imaginary companion or companions** (child may insist that the imaginary companions(s) are responsible for things that he or she has done).

0 1 2 16. **Child has intense outbursts of anger, often without apparent cause and may display unusual physical strength during these episodes.**

0 1 2 17. **Child sleepwalks frequently.**

0 1 2 18. **Child has unusual nighttime experiences** (child may report seeing "ghosts" or that things happen at night that he or she can't account for, such as broken toys or unexplained injuries).

0 1 2 19. **Child frequently talks to him or herself, may use a different voice or argue with self at times.**

0 1 2 20. **Child has two or more distinct and separate personalities that take control over the child's behavior.**

PERQ-Injury

Instructions: For each statement, please select the point on the scale (1-5) that best describes your reaction to the incident that resulted in the visit to the Emergency Room. Please record the appropriate number next to each item.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

_____ 1. I have felt upset about my child experiencing this incident.

_____ 2. I think about what happened to my child while I am working.

_____ 3. I have felt sad about my child experiencing this incident.

_____ 4. I am afraid of what other people will think about my child experiencing this incident.

_____ 5. I feel that I should have been able to keep the incident from happening.

_____ 6. I have felt afraid since I learned about my child experiencing this incident.

_____ 7. I have trouble falling asleep at night because I think about what happened to my child.

_____ 8. I have felt angry about my child experiencing this incident.

_____ 9. Since I learned about my child experiencing this incident, I have been having headaches, stomach aches, etc.

_____ 10. I have felt embarrassed about my child experiencing this incident.

_____ 11. I have cried about my child experiencing this incident.

_____ 12. I have felt ashamed about my child experiencing this incident.

_____ 13. I have felt responsible for my child experiencing this incident.

_____ 14. I have felt insecure since I learned that my child experienced this incident.

_____ 15. I feel guilty that I did not know about what caused the incident sooner.

Modified Stroop Procedure Stimuli

Trauma	Eating Disorder	Neutral
FEAR	FOOD	DOOR
DEATH	SCALE	PAPER
BAD	EAT	CAT
DOCTOR	SKINNY	PLANET
BLOOD	POUND	CHAIR

APPENDIX D

TABLES

Table 1

Intercorrelations Among Avoidance, Hyperarousal, and Reexperiencing Subscales of the ADIS-C and ADIS-P.

	ADIS-Child			ADIS-Parent		
Variable	Avoid.	Hyper.	Reexper.	Avoid.	Hyper.	Reexper.
Avoidance (C)	—	.59***	.59***	.24	.12	.39**
Hyperarousal (C)		—	.86***	.22	.29	.52***
Reexperiencing (C)			—	.19	.24	.46**
Avoidance (P)				—	.63***	.57***
Hyperarousal (P)					—	.67***
Reexperiencing (P)						—

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2

PTSD Categorical Levels Reported by Caregivers and Children

PTSD Symptom Category	Child ($n = 35$)		Caregiver ($n = 35$)		
	M	*SD*	*M*	*SD*	*r*
Reexperiencing	.43	.36	.28	.30	.50**
Avoidant	.46	.25	.31	.29	.09
Hyperarousal	.46	.32	.39	.30	.36*

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3

Dissociation by Total Number of Diagnoses

	Child Report (CPAS)			Caregiver Report (CDC)		
Number of Diagnoses	*n*	*M*	*SD*	*n*	*M*	*SD*
None	26	50.58	9.20	26	5.47	4.99
One or more	10	61.1	11.95	10	9.6	5.85

Note: Range of possible scores on the CPAS is 28-112. Range of possible scores on the CDC is 0-40.

Table 4

Child and Caregiver-reported Dissociation by Personal, Event, and Caregiver Characteristics

	Child Report (CPAS)			Caregiver Report (CDC)		
Variable	*n*	*M*	*SD*	*n*	*M*	*SD*
Child Gender						
Male	19	50.58	9.89	18	6.65	6.52
Female	17	56.76	11.44	18	6.58	4.43
Child Ethnicity						
African American	10	58.41	11.42	11	3.91	4.91
Caucasian	18	50.56	10.63	18	8.11	6.14
Native American/Hispanic	8	54.00	10.03	7	7.05	2.93
Event Frequency						
One time	23	54.91	11.77	22	5.24	4.37
More than once	12	51.59	9.40	13	8.84	6.75
Relationship of Perpetrator						
Family	5	51.40	9.32	6	10.04	7.20
Non-family	6	64.83	11.05	7	5.19	4.68
Caregiver Education (male)						
Less than HS Graduate	5	47.00	10.68	5	5.80	5.50
HS Graduate	10	56.10	12.14	10	8.17	7.20
Some College or More	5	50.40	9.24	5	5.20	5.81
Caregiver Education (female)						
Less than HS Graduate	8	53.63	10.99	9	7.17	6.96
HS Graduate	12	55.50	11.16	11	6.52	4.45
Some College or More	16	51.94	11.24	16	6.38	5.57
Caregiver Relationship (male)						
Father	14	51.14	10.83	13	5.06	5.23
Other	10	54.50	11.04	11	9.55	5.68
Caregiver Relationship (female)						
Mother	28	53.54	10.24	28	6.22	5.58
Other	8	53.38	13.98	8	8.00	5.29
Number of Caretakers						
One	24	52.54	10.81	24	7.11	5.79
Two	12	55.42	11.46	12	5.63	4.92

Note: Range of possible scores on the CPAS is 28-112. Range of possible scores on the CDC is 0-40.

Table 5

Demographic Relationship of Caregiver to Child and Education of Caregiver for Male and Female Caregivers.

	Female Caregiver ($N = 38$)		Male Caregiver ($N = 26$)	
Variable	*n*	*P*	*n*	*P*
Relationship to Child				
Mother/Father	30	78.9	15	57.7
Step-mother/Step-father	1	2.6	7	26.9
Life-Partner	—	—	1	3.8
Grandma/Grandpa	5	13.2	1	3.8
Aunt/Uncle	1	2.6	1	3.8
Cousin	—	—	—	—
Kinship Foster Care	1	2.6	1	3.8
Education of Caregiver				
< 7th Grade	—	—	—	—
9th Grade	3	7.9	2	7.7
10th and 11th Grade	7	18.4	4	15.4
High School Graduate	12	31.6	11	42.3
Partial College	6	15.8	2	7.7
College Graduate	8	21.1	3	11.5
Graduate Professional Training	2	5.3	—	—
Not Known	—	—	4	15.4

Table 6

Summary of Regression Analysis for Household Income, Demographic Relationship of the Male Caregiver, and PERQ Predicting Caregiver-reported Dissociation (N = 31)

Variable	*B*	*SE B*	β
Step 1			
Household Income	-.001	.001	-.40
Step 2			
Household Income	-.001	.001	-.31
Relation of Male Caregiver	-.196	1.251	-.03
PERQ	.053	.09	.13

Note: $R^2 = .16$ for Step 1 ($p = .03$); $\Delta R^2 = .01$ for Step 2 ($p = .81$). PERQ = Parent Emotional Reaction Questionnaire

Table 7

Summary of Regression Analysis for Child and Caregiver-reported PTSD Symptom Severity and Dissociation Predicting MSP Latency

	Child-report			Caregiver-report		
Variable	*B*	*SE B*	β	*B*	*SE B*	β
Step 1						
PTSD Severity	6.56	6.93	.18	-3.22	7.82	-.08
Step 2						
PTSD Severity	14.16	7.71	.39	-1.08	8.57	-.03
Dissociation	-6.67	3.48	-.40	-5.32	8.23	-1.14

Note: For Child-report symptoms $R^2 = .01$ for Step 1; $\Delta R^2 = .02$ for Step 2 ($ps > .05$). For Caregiver-report symptoms $R^2 = .03$ for Step 1; $\Delta R^2 = .12$ for Step 2 ($ps > .05$).

Table 8

Power Analyses of All Hypotheses

Hypothesis / Analysis	Child Report			Caregiver Report		
	Effect Size[a]	Actual *n*	*n* Needed[b]	Effect Size[a]	Actual *n*	*n* Needed[b]
1. PTSD Total (C)	.43**	34	29	.47**	35	24
PTSD Avoidance (C)	.45**	34	26	.44**	35	28
PTSD Hyperarousal (C)	.29	34	69	.46**	35	25
PTSD Reexperiencing (C)	.38*	34	39	.31	35	60
Total Diagnoses (A)	.99**	36	28	.76*	36	46
2. Gender (A)	.58	36	96	.01	36	>999
Ethnicity (A)	.31	36	105	.17	36	330
Age (C)	.19	36	167	.08	36	962
Household Income (C)	.45**	31	33	.40*	31	44
3. Event Frequency (A)	.31	35	322	.65	35	78
Interpersonal Nature of Event (A)	.67	35	76	.24	35	568
4. Caregiver Education-male (A)	.37	20	78	.22	20	204
Caregiver Education-female (A)	.14	36	498	.06	36	>999
Caregiver Relationship-male (A)	.31	28	336	.82*	24	50
Caregiver Relationship-female (A)	.01	36	>999	.33	36	296
Number of Caregivers (A)	.26	36	472	.28	36	410
Caregiver Emotional Reaction-PERQ (C)	.30	36	82	.32*	36	71
5. Male Caregiver Relationship, PERQ, and Household Income (C)	—	—	—	.57*	20	24
6. Relationship of Perpetrator (A)	1.32	11	22	.82	13	50
7. PTSD and Dissociation[c] (C)	.18	29	65	.02	28	468

Note: A = ANOVA/t-test, R = regression/correlation

[a] "Effect size" is given in Cohen's *d*-values for ANOVAs/t-test and *c*-values for correlation/regression.

[b] "*n* Needed" denotes the number of participants needed to see the effect at a power of .80 and an alpha value of .05.

[c] Analysis of PTSD and dissociation by caregiver and child-report predicting Stroop latencies.

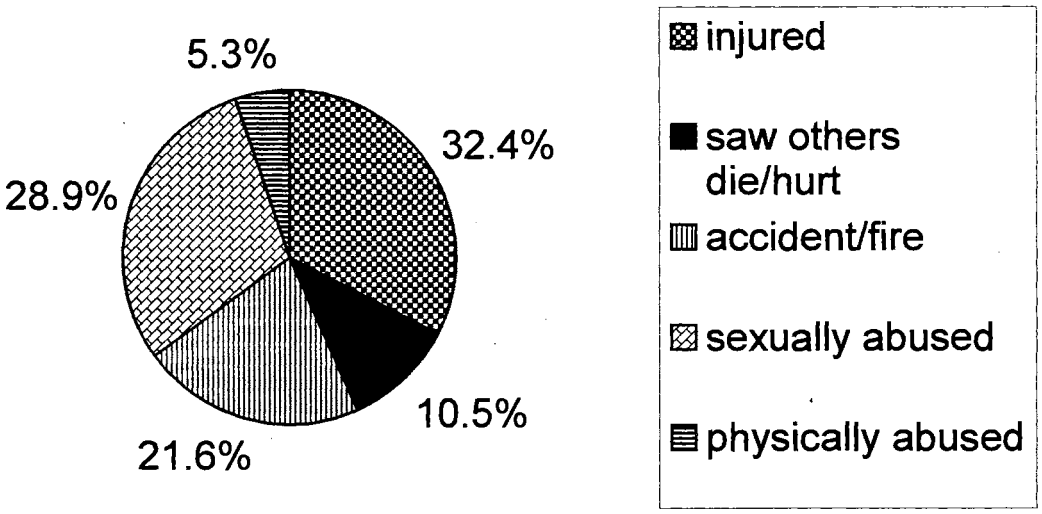
* $p < .05$, ** $p < .01$, *** $p < .001$

APPENDIX E

FIGURE

Figure 1

Percentage of Traumatic Event Types



APPENDIX F

UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER IRB APPROVAL

The University of Oklahoma
Health Sciences Center

OFFICE OF RESEARCH ADMINISTRATION

IRB NUMBER: 08660
MEETING DATE: 03/13/00
APPROVAL DATE: 04/09/00

Dr. Sharon Simpson
Pediatrics/Child Abuse Training and Resea
CHO 3B3406

SUBJ: Prevention of PTSD Through Immediate Intervention Following Trauma (Preventing Stress Reactions).

Dear Dr. Simpson:

The University of Oklahoma Health Sciences Center's Institutional Review Board reviewed the above-referenced protocol at its regularly scheduled meeting. The informed consent document and the protocol are hereby approved. You may begin subject enrollment. It is the Board's judgment that the rights and welfare of the individuals who may be asked to participate in this study will be respected; that the proposed research, including the process of obtaining finformed consent, will be conducted in a manner consistent with the requirements of 45 CFR 46, as amended; and that the potential benefits to subjects and to others warrant the risks subjects may choose to incur. This approval applies to the following:
Protocol received 2/25/00 - Revised "Guardian and Child" and "Caregiver" consent forms received 4/6/00.

As principal investigator of this protocol, it is your responsibility to insure that this study is conducted as approved by the Board. Any modifications to the protocol or consent form, initiated by you or by the sponsor, will require prior approval, which you may request in an amendment letter or memorandum to me. All study records, including copies of signed consent forms, must be retained for three (3) years after termination of the study.

It is a condition of this approval that you report promptly to the Board any serious, unanticipated adverse effects experienced by subjects in the course of this research, whether or not they are directly related to the study protocol. These adverse effects include, but may not be limited to, any experience that is fatal or immediately life-threatening, is permanently disabling, requires (or prolongs) inpatient hospitalization, or is a congenital anomaly, cancer or overdose. For multi-site protocols, the Board must be informed of serious adverse effects at all sites.

The approval granted here is effective for no more than one year. Should you wish to maintain this protocol in an active status beyond that date, you will need to provide the Board with a progress report summarizing study results to date. IRB staff in the Office of Research Administration will request that progress report from you approximately ten weeks before the expiration date of your current approval.

If you have questions about these procedures, or need any additional assistance from the Board, please contact IRB staff. Finally, please review your professional liability insurance to make sure your coverage includes the activities in this study.

Sincerely yours,

Joan L. Walker, M.D.
Chair, Institutional Review Board

JLW/EHC/cc

Post Office Box 26901 • 1000 S.L. Young Blvd., Room 121
Oklahoma City, Oklahoma 73190 • (405) 271-2090 • FAX (405) 271-8551

APPENDIX G

OKLAHOMA STATE UNIVERSITY IRB APPROVAL

Oklahoma State University
Institutional Review Board

Protocol Expires: 4/23/02

Date : Tuesday, April 24, 2001 IRB Application No AS0151

Proposal Title: THE UTILITY OF DISASSOCIATIVE SYMPTOMS FOLLOWING TRAUMATIC CHILDHOOD EVENTS

Principal Investigator(s) :

Blake Evans
215 N. Murray
Stillwater, OK 74078

Sharon Simpson
940 NE 13th Str, CHO 3B-3406
Oklahoma City, OK 731045066

Melanie Page
408 N Murray
Stillwater, OK 74078

Reviewed and Processed as: Expedited (Spec Pop)

Approval Status Recommended by Reviewer(s) : Approved

Signature :

Carol Olson, Director of University Research Compliance

Tuesday, April 24, 2001
Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

VITA

Blake A. Evans 2

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE DEVELOPMENT AND UTILITY OF DISSOCIATIVE SYMPTOMS FOLLOWING TRAUMATIC CHILDHOOD EVENTS

Major Field: Psychology

Biographical:

Personal Data: Born in South Sioux City, Nebraska, On May 7, 1971, the son of William and Mary Evans.

Education: Graduated from South Sioux City High School, South Sioux City, Nebraska in May 1989; received Bachelor of Arts degree in Psychology and English from the University of Nebraska, Lincoln, Nebraska in December 1993; received Master of Science degree in Clinical Psychology at North Dakota State University, Fargo, North Dakota in December 1997; received Master of Science degree in Psychology at Oklahoma State University, Stillwater, Oklahoma in May 2000. Completed the requirements for the Doctor of Philosophy degree in Clinical Psychology at Oklahoma State University in December 2002.

Experience: Obtained research experience working on more than 13 different projects over the span of nine years on subjects including resource loss, dissociation, disaster outcome, depression, hopelessness, pain perception, and PTSD. Received clinical experience working as a psychiatric technician at the Lincoln Regional Center, and as a clinical psychology intern at five separate facilities in North Dakota and Oklahoma. Completed a Clinical Psychology Internship at the VA Medical Center in Battle Creek, Michigan. Gained teaching experience as a teaching assistant or instructor for seven courses.

Professional Memberships: American Psychological Association, Association for the Advancement of Behavior Therapy.