Factors Related to the Development, Maintenance, and/or Resolution of Unresolved/Disorganized States of Mind Regarding Abuse in a Sample of Maltreated Individuals

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Abstract

This is the first prospective study of male and female child abuse survivors to investigate the rates of unresolved/disorganized states of mind with respect to abuse (U/d abuse) classifications and factors that increase or decrease the risk of being classified as U/d abuse during late adolescence and/or adulthood. Participants were drawn from an ongoing longitudinal study of families from low socioeconomic backgrounds. The present sample (n = 42; 19 males, 23 females) includes only individuals who were identified prospectively as having experienced childhood physical and/or sexual abuse by a caregiver and for whom scores from the Adult Attachment Interview for U/d abuse were available at age 19 and/or 26 years. The following constructs were included in analyses: infant attachment representations; maltreatment circumstances; dissociative symptoms across childhood and adolescence; relationships with parents, friends, and romantic partners over time.

Based on findings from previous longitudinal studies and attachment theory, it was hypothesized that disorganized/disoriented (D/d) attachment classifications in infancy would relate significantly to U/d abuse classifications, but that the circumstances of abuse (type, chronicity, or age of onset) would not relate significantly to U/d abuse status. Dissociative symptoms over time were anticipated to predict U/d abuse classifications. Positive and supportive relationships with others over time were expected to predict lower rates of U/d abuse classifications. Finally, following a cumulative risk perspective, it was expected that the added influence of severe trauma, a history of D/d

infant attachment, high degrees of dissociation, poor relationships over time, and insecure states of mind would significantly predict U/d abuse status.

Results revealed that approximately 36 percent of participants received U/d abuse classifications at age 19 and 41 percent at age 26, with little stability between the two assessments. Cumulative risk was significantly predictive of U/d abuse classifications. D/d infant attachment was a strong predictor of U/d abuse at age 19 but not at age 26 years. The circumstances of abuse, dissociative symptoms, secure infant attachment status, or the quality of important relationships by themselves were not significantly related to U/d abuse status at either age. Findings and needed future areas of research are discussed.

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Chapter 1: Introduction

Findings from numerous studies have demonstrated that child maltreatment can interfere with the successful integration and organization of attachment representations even into adulthood (e.g., Main & Goldwyn, 1998). Yet not all individuals who are maltreated demonstrate signs of unresolved/disorganized/disoriented (U/d) states of mind following the trauma. It is clear that the experience of maltreatment in and of itself does not inevitably lead to mental disorganization later on and that not all individuals who experience childhood maltreatment are equally vulnerable to U/d states of mind in adolescence and/or adulthood. The myriad factors that might influence whether individuals are more or less likely to demonstrate U/d states of mind following trauma, however, remain unclear.

Whereas much recent empirical attention has been devoted to identifying factors that promote "earned security" (a term used to describe individuals who have experienced malevolent childhood histories with their parents but demonstrate a secure/autonomous state of mind such that they are able to discuss these experiences during the AAI in a coherent and contained manner [e.g., Paley, Cox, Burchinal, & Payne, 1999; Pearson, Cohn, Cowan, & Cowan, 1994; Phelps, Belsky, & Crnic, 1997; Roisman, Padron, Sroufe, & Egeland, 2002]), very little attention has been paid to factors that may contribute to "earned organization" (i.e., individuals who experienced attachment-related trauma in childhood but are not classified as U/d with respect to that trauma on the Adult Attachment Interview [AAI; George, Kaplan, & Main, 1985; Main & Goldwyn, 1998]).

U/d states of mind with respect to abuse (U/d abuse)[1] and loss (U/d loss) have been shown to predict a number of problematic outcomes, such as criminality, drug use, psychological distress, violence, suicidal ideation and behavior. It is predictive also of disorganized/disoriented attachment representations exhibited by the infants of parents classified as U/d with respect to abuse or loss (see van IJzendoorn & Bakermans-Kranenburg, 1996 and Hesse, 1996 for reviews). In addition, U/d states of mind are likely to impede the effectiveness of interventions designed to promote mothers' sensitivity to their infant's attachment signals (Moran, Pederson, & Krupka, 2005). These findings highlight the need for studies dedicated to understanding the actual processes and degree to which maltreatment impacts individuals' state of mind as well as the need for studies devoted to identifying risk and protective factors that contribute to whether or not individuals are able to resolve childhood maltreatment experiences and integrate those experiences into a coherent and organized state of mind.

Knowing why some individuals exhibit signs of mental disorganization following trauma whereas other do not, how these representations develop and are manifested over time, and the functions that U/d states of mind may serve, provides a critical perspective for understanding the phenomenon of U/d states of mind and for designing interventions intended to prevent or alter disorganization following trauma. The majority of studies that have examined U/d states of mind with respect to trauma to date have done so in the context of examining their potential role as mediators for psychopathology or in relation to how U/d states of mind interact with interpersonal relationships -- especially with respect to mothers' relationships with their children. We know very little, however, about

what factors might mediate or moderate the effects of maltreatment on one's later state of mind. In the present study, the author expands on the existing research by investigating various factors that might increase or decrease the likelihood of demonstrating U/d abuse states of mind as assessed with the AAI.

The AAI is the primary method for assessing the organization of adolescents' and adults' current state of mind with respect to attachment and their resolution of earlier traumatic experiences, and it has been proven a valid and reliable measure for this purpose (Bakermans-Kranenburg & van IJzendoorn, 1993). The AAI allows for the assessment of unconscious feelings and perceptions about individuals' early attachment relationships by assessing carefully the process through which they respond to attachment-related questions about their childhood and to questions about certain traumatic experiences. Based on their responses, individuals' states of mind are classified as being primarily organized or disorganized.

Organized states of mind with respect to attachment experiences include both secure (i.e., autonomous) and insecure (i.e., dismissing or preoccupied) classifications. Individuals classified as having secure/autonomous representations are thought to value attachment and are able to talk about emotionally-charged attachment-related experiences in a free-flowing, objective, and coherent manner. Individuals with an insecure/dismissing state of mind fail to present a coherent picture of childhood experiences with their caregivers. They appear to try to keep attachment feelings deactivated by claiming lack of memory for childhood experiences, by idealizing primary caregivers and relationships beyond what they can support with episodic memories

during the interview, by derogating attachment experiences and/or relationships, or by denying and/or minimizing the effects of negative experiences on the self. Individuals with an insecure/preoccupied state of mind appear to be absorbed or preoccupied with attachment relationships and/or negative experiences. Their accounts of early attachment experiences are characterized by angry, passive, overwhelmed or fearful speech. They often are unable to remain focused while discussing childhood attachment relationships and wander off into irrelevant topics. Although not all of these strategies for dealing with attachment-related experiences are ideal, each is considered organized because it represents a state of mind in which attachment experiences have been integrated into a single consistent system of representation (Main, 1995).

Disorganized states of mind include U/d and Cannot Classify (CC) classifications. Adults are classified as CC if they reveal a global breakdown in strategy and fail to demonstrate a predominant and consistent state of mind with respect to attachment (Hesse, 1996). For example, an individual with a CC classification might be very idealizing of one parent (reflective of a dismissing strategy) and very angry with another (reflective of a preoccupied strategy). In contrast, adults who are classified as U/d reveal a breakdown in strategy in a specific and isolated area (i.e., discussion of trauma) (Hesse, 1996), and a distinct primary organized state of mind (insecure/dismissing, insecure/preoccupied/ or secure/autonomous) usually can be identified (Main & Goldwyn, 1985-2002). Individuals are classified as U/d if their reports of trauma have not been reconciled and integrated into a consistent and coherent understanding of the effects of the experiences (Main & Hesse, 1990). Manifestations of U/d states of mind might

include extreme behavioral reactions or brief lapses in the metacognitive monitoring of reasoning and/or discourse with respect to experiences of abuse or loss discussed during the interview (Main & Hesse). Reports of U/d behavioral responses following trauma might include extreme behaviors, such as suicidal attempts, that are not followed by statements demonstrating evidence of resolution. Examples of lapses in monitoring of reasoning include unsuccessfully denying the occurrence of traumatic experience, feeling inappropriately guilty or responsible for the traumatic event, or becoming psychologically confused, fearful, or disoriented during discussions of experienced trauma. Lapses in the monitoring of discourse during a discussion of trauma appear to suggest a "state shift" (Hesse). Examples of this include disoriented speech, such as demonstrating instances of prolonged silences, unusual attention to detail, poetic or eulogistic speech, and/or sudden change in topics or discourse style. Each of these responses is thought to reflect multiple segregated and dissociated memory and belief systems that result from an individual's failure to integrate frightening mental contents (Bowlby, 1980). U/d states of mind are thought to serve the function of fragmenting awareness or defensively excluding painful memories or events from consciousness in order to avoid overwhelming psychological suffering (Hesse).

Although it seems reasonable to suspect that experiences other than loss of others due to death and physical and/or sexual abuse committed by a caregiver between the ages of 5 and 12 years might result in lapses in monitoring or reasoning or extreme behavioral reactions representative of U/d states of mind, these are the only experiences coded for U/d states of mind on the AAI. As such, as Lyons-Ruth and colleagues have pointed out

it is unclear whether it is the traumatic experience of loss or abuse itself that interferes with one's ability to develop organized states of mind or whether other negative experiences also play a role in developing or maintaining U/d states of mind (Lyons-Ruth, Yellin, Melnick, & Atwood, 2003). A few researchers have begun recently to investigate the influence of other potentially traumatic experiences on U/d states of mind (Bailey, Moran, & Pederson, 2007; Hughes, Turton, Hopper, McGauley, & Fonagy, 2004; Lyons-Ruth et al., 2003; Riggs & Jacobvitz, 2002). The majority of this research has been constrained by methodological limitations, however.

First, extant research has relied on retrospective self-report accounts of trauma. These methods can be problematic because of the potential effect of memory bias on individuals' accounts of childhood experiences. There can be wide individual and group variation in what individuals consider to be abuse and in what experiences they are willing to discuss. Individual characteristics, such as cognition, mood, or social context, can influence how one perceives and reports others' or even their own behaviors. Also, reports of attachment experiences, including maltreatment, may be confounded by one's attachment representations. There is ample empirical evidence confirming that one's state of mind with respect to attachment does influence what one recalls or reveals of oneself to others (e.g., Allen, Hauser, & Borman-Spurrell, 1996; Kobak & Sceery, 1988; Pianta, Egeland, & Adam, 1996).

Very often the information regarding abuse for studies examining its impact on AAI classifications is gathered from the individual's responses to AAI questions – the same instrument from which U/d states of mind are scored. The AAI is not intended to be

a factual report of childhood experiences, however, and abuse experiences are often underreported on the AAI (Hill, Byatt, & Burnside, 2003; Huston, 2001). This appears to be especially true with respect to sexual abuse (Bailey et al., 2007). Further, Crowell, Treboux, and Waters (2002) found that only 26 percent of individuals from their sample who reported experiencing childhood abuse during an initial AAI administration also reported the abuse again during an AAI administered 2 years later.

Another limitation of existing studies is that most researchers have failed to differentiate between types of disorganized states of mind during analyses (e.g., van IJzendoorn & Bakermans-Kranenburg, 1996). CC and U/d classifications are often combined into one category even though, as mentioned previously, one reflects a global breakdown in strategy that might not be related to trauma and the other reveals a breakdown in strategy specifically during discussion of trauma. Other than knowing that both U/d and CC classifications have been shown to be related to psychopathology and to predict infant D/d classifications (van IJzendoorn & Bakermans-Kranenburg, 2008), we know very little more about how U/d and CC are conceptually and theoretically similar or different and how they are interrelated.

In addition, researchers often fail to differentiate between U/d states of mind due to experiences of loss (U/d loss) and U/d states of mind due to experiences of abuse (U/d abuse). While often statistically necessary, this practice presents several potential problems. The Main and Goldwyn scoring criteria are different for U/d abuse and U/d loss. Loss experiences are more likely to be scored than are childhood abuse experiences both because there is generally more ambiguity regarding whether a caregiver was

abusive than whether someone died, and because reports of loss experiences are probed more extensively during the AAI than are reports of abuse (Hesse & Main, 2000). Further, whereas scoring of abuse experiences is limited primarily to physical or sexual abuse at the hands of a parent or other attachment figure/caregiver between the ages of 5 and 12 years, scoring of loss can include the death of non-attachment figures and is not limited to time of occurrence.

Researchers that have examined U/d abuse and U/d loss separately have reported findings suggesting that the two types of U/d states of mind are related to different antecedents and outcomes. Of course, by nature of definition, abuse experiences are generally more predictive of U/d abuse classifications than are experiences of loss, and loss experiences are more predictive of U/d loss status than are abuse experiences. It appears, however, that other types of trauma also might be differentially related to U/d abuse and U/d loss states of mind. U/d abuse has been linked significantly to disorganized/disoriented attachment representations in infancy (Weinfield, Whaley, & Egeland, 2004), dissociation (Riggs et al., 2007), PTSD diagnoses (Riggs et al.; Stovall-McClough, Cloitre, & McClough, 2008), suicidal ideation (Adam, Sheldon-Keller, & West, 1996; Riggs & Jacobvitz, 2002), marital discord (Crowell et al., 2002), and substance abuse (Riggs & Jacobvitz). In contrast, U/d loss has been shown to be related significantly to substance use disorders (Stovall-McClough & Cloitre, 2006), emotional distress and criminal charges (Riggs & Jacobvitz). Lyons-Ruth, Zoll, Connell, and Grunebaum (1989) reported that U/d states of mind regarding loss and abuse also are differentially related to how mothers behave toward their young children.

Of those researchers that have differentiated between U/d abuse and U/d loss, the large majority has focused specifically on the correlates of U/d loss state of mind. The research examining correlates of U/d abuse has been limited not just by the use of retrospective abuse data but also by the sole reliance on clinical samples (Adam et al., 1996; Crowell & Hauser, 2008; Riggs et al., 2007; Stovall-McClough & Cloitre, 2006) or on all-female samples (Bailey et al., 2007, Hughes et al., 2004; Jacobvitz, Leon, & Hazen, 2006; Lyons-Ruth et al., 2003; Stovall-McClough & Cloitre). Findings generated from these studies may not be generalizable to other samples. The rates of U/d classifications have been shown in several studies to be overrepresented in clinical populations (van IJzendoorn & Bakermans-Kranenburg, 1996). Also, although several studies have shown that males demonstrate similar rates of overall U/d state of mind classifications as do females (van IJzendoorn & Bakermans-Kranenburg), some researchers have found significant gender differences with respect to overall U/d status (e.g., Crowell et al., 2002). Further, there is some evidence that U/d abuse status is associated with different factors for males and females. For example, Riggs and Jacobvitz (2002) reported that for women, but not for men, U/d abuse related significantly to substance abuse, suicidal ideation, family physical or sexual abuse, and parental separation or divorce.

The rates of U/d abuse classifications in nonclinical mixed gender adolescent and adult samples in which maltreatment experiences are identified prospectively remain unknown. Also, although researchers have examined the degree of stability and change of the various organized state of mind classifications across adolescence and/or adulthood

(e.g., Ammaniti, van IJzendoorn, Speranza, & Tambelli, 2000; Grossmann, Grossmann, & Kindler, 2005; Sampson, 2005), the stability of overall U/d states of mind over time, and of U/d abuse states of mind specifically, has been left relatively unexamined. Meta-analytic data reported by Bakermans-Kranenburg and van IJzendoorn (1993) suggest that overall U/d states of mind are less stable over time than are organized states of mind. Crowell and her colleagues are the only researchers known to the author to have investigated the degree of stability or change of U/d abuse states of mind specifically. In both their normal and clinical samples, despite a high rate of stability in secure and insecure attachment categories and even in U/d loss classifications, they reported no significant stability in U/d abuse classifications across 21 months (Crowell et al., 2002) or 13 years (Crowell & Hauser, 2008). It is important to point out again that for these studies all information about abuse was gathered retrospectively from the participants.

The factors that might contribute to the stability or change of U/d abuse states of mind across adolescence and adulthood also have received little empirical attention. Although findings from the full sample from which the current sample was drawn indicates that relationship factors, such as higher friendship quality at age 19 years and romantic relationship quality at age 23 years, are related to maintaining or switching to a secure state of mind from ages 19 to 26 years (Sampson, 2005), these same factors may not be applicable to the stability or change of U/d abuse states of mind. Secure and insecure primary classifications are thought to result more from day-to-day interactions with attachment figures over time, whereas U/d classifications are thought to originate from traumatic experiences. In Crowell et al.'s (2002) study, reports of more negative life

events, such as financial, familial, marital, employment, and personal problems, were related to the stability of U/d abuse classifications, but primary organized AAI classifications, IQ, educational level, duration of romantic relationship, separation/divorce, having a child, and living away from parents were not. Individuals who remained U/d over time, especially those who were U/d with respect to abuse, were more likely to threaten to leave and act aggressively toward their partners

In summary, not all individuals who are maltreated during childhood demonstrate signs of U/d abuse states of mind later. Due to a lack of research and to limitations of previous studies, both the rates of U/d abuse in maltreatment samples and also the factors that might influence whether individuals are more or less likely to demonstrate U/d abuse states of mind in adolescence or adulthood remain unclear. The present study expands upon the existing research in several ways to begin to address these important risk and resilience questions. It is the first longitudinal study to focus on a nonclinical sample of male and female abuse survivors, on U/d abuse state of mind classifications specifically (separately from U/d loss or CC states of mind) during late adolescence and adulthood, and on factors that might impact state of mind organization following childhood abuse. The data for this study were gathered prospectively and using various sources and methods, allowing for a more accurate and comprehensive assessment of the various factors that might contribute to later state of mind organization. Because this sample includes both males and females, it can provide information about rates of U/d abuse classifications for both genders and allows for the analyses of gender differences in determining factors that might contribute to or impede the process of mental organization

following abuse. Because the sample is comprised only of individuals who experienced childhood abuse and for whom U/d abuse scores were available, the differential impact of maltreatment and other factors on later disorganization can be analyzed more clearly. Finally, with the present study U/d abuse states of mind were assessed at two different times, making it possible to determine the degree to which U/d abuse status remained the same or changed from adolescence to adulthood.

Chapter 2: Review of Literature

Early Attachment Representations and U/d Abuse State of Mind

Many attachment researchers and theorists maintain that a pathway to later U/d states of mind can be initiated by disorganized attachment representations in infancy. When applying a developmental pathways model for examining disorganized representations of attachment over time and how they may be impacted by maltreatment, it is important to consider the development of disorganized attachment representations and ways in which they may change over time. A developmental perspective considers both the continuities and discontinuities between earlier and subsequent development (Rutter, 1980). Continuity of development over time does not mean necessarily that a certain behavior will remain the same from childhood to adulthood (homotypic continuity); rather, heterotypic continuity might occur such that behaviors manifest themselves differently over time yet have the same underlying core meaning (Breger, 1974). Although disorganized representations take on different (but related) manifestations across infancy, childhood, and adulthood, across all developmental periods they are characterized by the failure to maintain a consistent strategy and a single coherent system of attachment representation in response to overwhelming fear. Also, although the specific situations that might cause disorganized representations likely change over time, disorganization presumably maintains the same fundamental meaning and continues to serve the same function -- the “defensive exclusion” of a memory or event from consciousness in order to avoid overwhelming psychological suffering (Bowlby, 1980).

Attachment representations in infancy are assessed most commonly with the Strange Situation laboratory procedure (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth & Wittig, 1978). This procedure is intended to elicit mild stress from the infant by presenting him or her with a series of separations and reunions with the caregiver in an unfamiliar setting. The pattern or organization of behavior the infant displays during this procedure is thought to reflect his or her attachment representations that have developed over time within the context of a specific caregiving relationship (Sroufe & Waters, 1977).

According to Bowlby (1969/1982), because infants are biologically predisposed to maintain proximity to attachment figures during times of stress to ensure their survival, they will adapt their emotional and behavioral reactions to meet the demands of the specific type of interactional pattern brought forth by their caregiver. The patterns demonstrated by infants in the presence of their caregivers during the Strange Situation are classified as either organized or disorganized/disoriented $(D/d)^2$ (Ainsworth et al., 1978; Main & Solomon, 1986, 1990; Main & Weston, 1981). Organized classifications (which include both secure and insecure patterns of attachment behavior) are considered organized because the attachment-related strategies demonstrated by the infant are adaptive within that particular parent-infant relationship and also are consistent and clearly directed in that they allow the infant to maintain acceptable levels of organization when distressed while in the caregiver's presence (Main & Hesse, 1990; Sroufe & Waters, 1977). In contrast, infants who are classified as D/d are unable to maintain a consistent or coherent, organized pattern of attachment behavior when in the presence of

their caregiver during times of stress. Instead, during these times, they display a temporary collapse of strategy and exhibit seemingly conflicted and disorganized and/or disoriented behavioral responses, such as contradictory, misdirected, or stereotypical behaviors, like stilling and freezing (Main & Solomon, 1986, 1990). D/d classifications are assigned in conjunction with a primary organized classification (i.e., secure, avoidant, or ambivalent).

According to Bowlby (1973, 1980) D/d attachment representations develop when an infant is faced with frightening experiences yet lacks the capacity to self-regulate intense emotions, turn to the caregiver for assistance with this task, or deactivate the developing attachment system. In these situations, the infant's attachment behavioral system becomes overwhelmed, and if he or she is unable to integrate these frightening mental contents in a coherent manner, traumatic memories might not become consciously represented and, as a result, multiple segregated and dissociated memory and belief systems develop (Bowlby; Liotti, 1992). It has been suggested that infants who are frightened by their caregivers – the persons to whom they are biologically predisposed to seek for comfort when alarmed or frightened – are placed in an "irresolvable paradox" in that they are compelled to both approach and withdraw from the source of fear (Main & Hesse, 1990).

Consistent with Bowlby's theory, there is substantial evidence that infant D/d attachment representations are associated with maltreatment and other frightening behaviors exhibited by a parent, including those that result from a parent's U/d state of mind or from various forms of parental mental illness (e.g., Carlson, 1998; Carlson,

Cicchetti, Barnett, & Braunwald, 1989; Cicchetti & Barnett, 1991; Crittenden, 1985; Egeland & Sroufe, 1981; Gaensbauer & Harmon, 1982; Lyons-Ruth, Repacholi, McLeod, & Silva, 1991; Lyons-Ruth, Bronfman, & Parsons, 1999; Main & Hess; Schneider-Rosen, Braunwald, Carlson, & Cicchetti, 1985). Whereas the rates of D/d classifications are approximately 14 percent for middle class nonclinical samples and 24 percent for low socioeconomic samples (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999), in infant maltreatment samples the reported rates have been as high as 82 percent (Carlson et al., 1989).

Bowlby (1973) maintained that the early patterns of affective response and resulting cognitive representations that develop from repeated interactions with the caregiver will eventually become internalized in the child, will continue to serve as prototypes for later relationships, and will influence later development. Because internal working models are fairly resistant to change, the strategies that develop for dealing with stress and social situations early on are likely to persist, even if they are ineffective. Following this theory, whereas an early secure attachment representation might be a protective factor against disorganizing effects of trauma, a disorganized attachment representation might leave a child without an organized strategy for making sense of and integrating his or her experiences, if maltreatment should occur at a later point in time. Incompatible and segregated systems that develop during infancy can persist over time such that, during times of stress, they are likely to come to the forefront, preventing the individual from putting forth a coherent and effective strategy for managing the intense and incompatible emotions. Instead, the individual's usual stress-coping strategy

becomes temporarily disorganized and replaced with ineffective, nondirected, and incoherent strategies, such as those demonstrated by U/d individuals during discussion of abuse or loss with the AAI (Main, 1991).

Providing support for Bowlby's theory, several researchers have shown that D/d attachment representations from infancy can be carried forward into later years (van IJzendoorn et al., 1999). Children with disorganized infant attachment representations tend to develop role-inverting (i.e., overly controlling) attachment behaviors toward their caregivers during the early school years (Jacobvitz & Hazen, 1999; Main & Cassidy, 1988; Wartner, Grossmann, Fremmer-Bombik, & Suess, 1994). This overly controlling pattern of behavior is considered to be the developmental counterpart to disorganized attachment representations in infancy (Main & Cassidy). Also, children with histories of disorganized attachment often demonstrate continued disorganizing patterns when faced with imagined situations involving stressful attachment-related content. When involved in tasks of family drawings, story telling and pictures of parent-child separations, doll play, or fantasy sandbox play, children with disorganized histories demonstrate feelings of fear and powerlessness. They may become silent or too distressed to complete the task, use nonsense language or illogical statements, or engage in discussions of bizarre and frightening events but without effective solutions (Cassidy, 1988; Grossmann & Grossmann, 1991; Kaplan, 1987; Rosenberg, 1984; Solomon, George, & Dejong, 1995). These findings suggest that, when examined at the level of representation, there appears to be some stability from disorganization during infancy to childhood (Main, Kaplan, & Cassidy, 1985; van IJzendoorn et al., 1999).

Most of the studies examining the stability of attachment representations from infancy to adolescence or adulthood have focused on secure vs. insecure states of mind only and have not examined the stability of disorganized states of mind specifically (e.g., Ammaniti et al., 2000; Grossmann, Grossmann, & Zimmerman, 1999; Hamilton, 2000; Sampson, 2005; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Weinfield, Sroufe, & Egeland, 2000). There is some empirical evidence, however, that disorganized attachment representations in infancy do predict U/d states of mind in adolescence and adulthood (Main, Hesse, & Kaplan, 2005; Sroufe, Egeland, Carlson, & Collins, 2005; Weinfield, Whaley, & Egeland, 2004). As stated in a previous paper, however, although infant disorganization may be a precursor to U/d states of mind on the AAI, "this would likely be underestimated in any sample…where some participants had not experienced an important loss or abuse by an attachment figure" (Weinfield et al., p. 82). As such, longitudinal studies of maltreatment samples are needed to further our understanding of the link between early and later disorganization and to increase our awareness of other factors that may moderate the effects of childhood abuse on later U/d abuse state of mind status.

Only in Weinfield et al.'s (2004) study was the relation between infant D/d scores and the different types of U/d state of mind examined. In that study, we found that D/d scores were significantly predictive of U/d abuse scores but not of U/d loss scores at age 19 years. This finding suggests that the D/d attachment representations that develop early on can persist over long periods of time and are particularly influential to how an individual ultimately integrates experiences of childhood abuse in adolescence.

Additional studies are needed to determine whether early disorganization also predicts U/d abuse status beyond age 19 years.

The role that early organized but insecure attachment representations play in protecting against or serving as a risk factor for later U/d states of mind is unclear. Bowlby (1973, 1980) and Crittenden and Ainsworth (1989) have suggested that infants with insecure attachment representations are more vulnerable to developing segregated systems following trauma. In contrast, Lyons-Ruth, Bronfman, and Atwood (1999) have argued that insecure but organized attachment relationships should render sufficient protection and comfort to buffer one from disorganization. Few researchers to date have examined the separate influences of insecure and disorganized representations on later mental and/or behavioral lapses following trauma. There is limited empirical suggestion, however, that early secure attachment representations can buffer against early disorganization (e.g., Lyons-Ruth, Bronfman, & Parsons, 1999). In Lyons-Ruth et al.'s study, for infants whose mothers demonstrated frightening behaviors, those infants with secure attachment representations were less likely than infants with insecure representations to demonstrate disorganization toward the mother during the Strange Situation. Using the larger study sample from which the participants of the current study were drawn, Weinfield and colleagues found that infants with secure attachment representations were somewhat (but not significantly) less likely than expected to be classified as overall U/d at age 19 years. Additional studies are needed to determine whether these findings continue to exist beyond adolescence and whether early security is related to later U/d outcomes specifically.

There also is little research examining stability of U/d states of mind from adolescence to adulthood. Of course, different factors may be responsible for changes in U/d states of mind over time than those factors that play a role in the initial development of U/d abuse states of mind. Changes in state of mind organization following age 19 are entirely plausible. Although attachment theory proposes that internal working models become increasingly difficult to alter as one grows older (Bowlby, 1980), even in adulthood internal working models can change (Roisman et al., 2002; Samson, 2005; Waters et al., 2000; Weinfield et al., 2004). Adolescence and adulthood may be times in which individuals are particularly likely to reorganize their attachment representations. On the one hand, Liotti (1992) has theorized that life changes such as becoming involved in a serious romantic relationship and/or becoming a parent might leave one particularly vulnerable to experiencing negative effects of earlier trauma. On the other hand, it is theoretically plausible that temporal distance from the abuse might allow individuals the time necessary to reorganize their mental state. Further, cognitive advances, establishing more autonomy from parents, and developing other attachment relationships might allow individuals to resolve earlier trauma. As stated previously, however, researchers have failed to find an empirical link between changes in U/d abuse states of mind across assessments and significant life events, such as separation/divorce, having a child, or living away from parents (Crowell et al., 2002).

In summary, only one study has relied on prospective data of abuse and other childhood experiences when examining the factors that might be related to U/d abuse state of mind (Weinfield et al., 2004). Findings from that study provided some

preliminary evidence that disorganized attachment representations in infancy can initiate a pathway to a later U/d abuse state of mind in adolescence. Several questions remain regarding the role that early organized (secure and insecure) attachment representations play in influencing later U/d states of mind, however. Longitudinal studies are needed to further our understanding of this influence as well as to determine whether shifts in organization of attachment representations correspond with developmental periods and/or significant life changes often encountered in adolescence and adulthood.

Maltreatment Circumstances and U/d Abuse States of Mind

There is ample evidence suggesting that the context in which maltreatment occurs (i.e., the relation of the abuser to the child), under what circumstances (i.e., the type, frequency, duration, and severity of the maltreatment), and the developmental age of the child when experiencing trauma are important predictors of later developmental outcomes in general (e.g., Kendall-Tackett, Williams, & Finkelhor, 2001). Both a dearth of relevant studies and methodological challenges, however, have prevented us from knowing if these factors are likely also to impact whether or not individuals develop or maintain U/d abuse states of mind.

Type of trauma. Although the term "maltreatment" often is used generically, ignoring the unique impact that each type of abuse and combinations of abuse might have on a child, empirical evidence suggests that different forms and combinations of maltreatment are associated with different outcomes (e.g., Bolger & Patterson, 2003; Egeland & Sroufe, 1981; Farber & Egeland, 1987; Manly, Kim, Rogosch, & Cicchetti, 2001; Pianta, Egeland, & Erickson, 1989; Yates, Dodds, Sroufe, & Egeland, 2003). For

example, childhood physical abuse has been linked to behavioral and social problems, and sexual abuse has been linked to PTSD symptoms (see Macfie, Cichetti, & Toth, 2001 for a review). Childhood sexual abuse, more than physical abuse, is more consistently related to later dissociative symptoms (e.g., Briere & Runtz, 1990; Chu & Dill, 1990; Irwin, 1994; Sanders & Giolas, 1991; Waldinger, Swett, Frank, & Miller, 1994). Different forms of child maltreatment have been shown to impact even the ways in which adults later interact with their children (Lyons-Ruth & Block, 1996).

Although theoretically each type of maltreatment also might interfere with the organization of individuals' attachment representations in different ways and for different reasons, the influence of the type of trauma on later U/d abuse status has received little empirical attention. The few studies that have been done have reported mixed results. For example, Jacobvitz and colleagues (2006) found that the type of abuse was not predictive of later U/d states of mind in a sample of pregnant women. Bailey and colleagues (2007) found in their sample of women who gave birth during adolescence that retrospective reports of physical abuse were unrelated to later U/d abuse status, but reports of sexual abuse were marginally related to U/d abuse status in adulthood. Additional studies are needed to examine whether the type of childhood abuse experienced has differential impacts to U/d abuse state of mind when abuse data are gathered prospectively.

There are methodological challenges associated with assessing the impact of other types of abuse on adults' ability to resolve those traumatic experiences, however. As mentioned previously, scoring of U/d abuse is limited to discussions during the AAI of physical and sexual abuse experiences only. Physical or emotional neglect, psychological

unavailability, threats of abandonment, witnessing inter-parental violence, or even severe abuse such as rape by a stranger (although all are presumably traumatizing events) typically are not scored for U/d abuse. The studies that have investigated the influence of other types of abuse or trauma on U/d states of mind have produced inconsistent findings. Lyons-Ruth and colleagues (2003) reported that when AAI questions were modified for a group of mothers to include additional questions related to abuse and loss that are not normally coded in the AAI (i.e., questions about experiencing childhood neglect, witnessing parental violence, parental separation or divorce, and placement of the individual in out-of-home care during childhood), neither the type of abuse nor the type of loss was related to later U/d abuse or to U/d loss states of mind, respectively. Similarly, Jacobvitz and colleagues (2006) reported that frightening and potentially traumatic childhood experiences, such as parents going into rages, threats of abandonment by parents, extended separations from parents, witnessing domestic abuse, and rape by a stranger, were not linked to a higher likelihood of U/d classifications.

Other researchers have found that other types of trauma do influence the demonstration of later U/d abuse states of mind. For example, Hughes and colleagues found that for women who reported histories of childhood physical and/or sexual abuse, those who also experienced a stillbirth were significantly more likely to receive a U/d abuse classification than those who had not experienced a stillbirth (Hughes et al., 2004). Also, Riggs and Jacobvitz (2002) found that having parents who separated or divorced or having a family member (other than the respondent) who experienced physical or sexual abuse predicted later U/d classifications.

Because each of the above studies relied on retrospective reports of childhood trauma and most of the study samples included women only, additional studies are needed to determine whether the type of traumatic experience(s) influences U/d abuse states of mind when information of childhood trauma is obtained prospectively and also whether similar findings exist for males.

Severity and chronicity of trauma. In general, the empirical literature suggests that the more severe, frequent, and chronic abuse experiences are, the more predictive they are of poorer developmental outcomes in general (Bolger & Patterson, 2001; Kendall-Tackett et al., 2001; Manly et al., 2001; Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997). When maltreatment begins early in development and continues for a long period of time, children are especially at greater risk for poor developmental outcomes (Bolger & Patterson; Manly et al.; Roth, Newman, Pelcovitz, van der Kolk, & Mandel, 1997). For example, longer maltreatment chronicity has been shown to be related to more aggressive behavior, rejection from peers, and to lower self esteem across elementary school years (Bolger & Patterson, 2003).

In terms of the effects on the mental organization of attachment experiences, it seems reasonable to suspect that the longer maltreatment occurs, the more difficult it would be to integrate the experiences into a coherent and consistent memory and belief system. In addition, the longer the maltreatment continues, the fewer opportunities the individual likely will have for restorative experiences that would allow him or her to mentally reorganize negative attachment experiences. It seems entirely plausible also that more severe abuse will be more frightening to the victim, making it more difficult to

integrate such traumatic experiences into a coherent system of mental representation. Yet, attachment researchers using retrospective data of maltreatment have published inconsistent findings regarding whether the severity or chronicity of trauma predicts U/d states of mind.

Studies regarding the impact of the severity of loss have failed to show a significant link between severity and U/d loss classifications. The presumed severity of childhood loss (determined by whether the loss was due to parental death, separation/divorce, out-of-home care) did not differentially predict later U/d loss states of mind status in a sample of high-risk mothers (Lyons-Ruth et al., 2003). In addition, presumably more severe loss experiences occurring in adulthood (determined by how long a woman carried her baby in utero before losing it to stillbirth) were not predictive of significantly higher U/d loss scores (Hughes et al., 2004).

Findings regarding the effects of severity of abuse on U/d abuse states of mind have been mixed. Jacobvitz and colleagues (2006) found that, although the type of abuse was not predictive of later U/d states of mind, the severity of physical and/or sexual abuse was related to increased likelihood of being classified as U/d. Bailey et al. (2007) also found that the frequency of occurrence of several types of maltreatment (i.e., physical abuse, sexual abuse, emotional abuse, and emotional and physical neglect) was strongly related to U/d abuse classifications on the AAI. In contrast, in Lyons-Ruth and colleagues' (2003) study, the severity of maltreatment in childhood (determined by rating the extent of abuse and chronicity based on participants' responses to modified abuse questions from the AAI)) was not related to later U/d abuse classifications in a sample of

high-risk mothers. For their study only three participants were classified as U/d abuse, however. In Stovall-McClough and Cloitre's (2006) study, the duration, extent, severity, or number of perpetrators failed to significantly predict the likelihood of being classified as U/d abuse in a sample of adult female survivors of childhood sexual and/or physical abuse. Again, all of these findings were based both on retrospective self-report measures of abuse and all-female samples. Studies are needed to determine whether similar findings are yielded when information about the severity and chronicity of trauma is gathered prospectively.

Relationship to perpetrator. Maltreatment, of course, occurs in a relational context. As such, the relationship of the victim to the perpetrator might be an important factor influencing how maltreatment experiences impact later U/d states of mind. Research suggests that for sexual abuse victims, when the perpetrator is someone with whom the victim had a presumably closer relationship (e.g., fathers or stepfathers) prior to the abusive experiences, the outcomes are generally worse (Kendall-Tackett et al., 2001). In terms of organizing attachment-related experiences, being victimized by someone the child trusts and depends on for care and protection might be perceived as a greater betrayal. Thus, it might become more difficult to integrate attachment-related experiences of trauma in a coherent manner. The influence of the relationship of the perpetrator on later U/d abuse states of mind has received little empirical attention, but there is some evidence that experiencing the loss of a close person (e.g., parent, sibling, infant) versus a less close person is not associated with significantly higher rates of U/d loss states of mind (Ainsworth & Eichberg, 1991). Determining the impact of the

relationship between the victim and the perpetrator on later U/d states of mind with respect to abuse is more difficult, however. Because the AAI focuses primarily on one's childhood experiences with attachment figures, abuse committed by someone other than an attachment figure is less likely to be queried during the AAI or scored for U/d abuse states of mind.

Age of onset. The developmental age at which one experiences an event will influence how he or she makes sense of that experience. Therefore, the long-term effects of maltreatment will likely differ depending on the child's developmental stage and level of understanding when the maltreatment occurred. For example, neglect early on is likely to be especially frightening to a child who is still completely dependent on a caregiver for survival (e.g., Crittenden, 1985), whereas neglect at a later age, when a child is more equipped to physically care for himself or herself, might not be as frightening. Also, brief separations might not be as frightening to an older child who can communicate with the caregiver about the terms of an upcoming separation. As individuals develop enhanced cognitive skills, communicative skills, social networks, and self-regulatory skills for managing stress, their vulnerability to disintegrated representational systems might decrease (Main, 1991).

It is theoretically plausible that the more recent the trauma, the more likely individuals are to demonstrate U/d states of mind, because they will have had less time to resolve the trauma. The empirical research fails to support this theory, however. Findings from one study suggests that women who experienced a stillbirth nearer the time of AAI administration were not more likely to demonstrate notable signs of U/d loss states of

mind than were women who experienced a stillbirth at a time that was more distant from when the AAI was administered (Hughes et al., 2004). To the author's knowledge, however, there are no studies that have examined the influence of abuse temporal proximity on U/d abuse states of mind.

Consistent with an organizational developmental perspective, earlier experience is thought to be especially important because it provides a foundation for both current and later development. Main (1991) has suggested that young children are more vulnerable to developing multiple segregated systems for storing traumatic memories of maltreatment because of their greater egocentricity, their tendency to believe they caused the abuse to occur, and their inability to engage in metacognitive monitoring. Further, according to Main, early maltreatment is likely to leave one especially vulnerable to concurrent and subsequent disorganization, because early experiences of trauma cannot be readily brought to consciousness or verbal recall, and therefore cannot be readily recognized, examined, or corrected. In addition, early maltreatment might lead to the development of disorganized attachment representations and to impairments in one's ability to develop and maintain positive interpersonal relationships, to cope with future stresses, and to adequately regulate emotions. Unless life circumstances change considerably, these consequences of maltreatment can be maintained and carried forward into adulthood, perhaps leaving one at a greater risk of failure to effectively integrate traumatic attachment-related experiences, such as abuse, in an organized manner.

Developmental neurobiological studies show that severe and repeated trauma occurring early during one's development can have adverse and perhaps permanent

effects on brain development that might leave one more physiologically vulnerable to subsequent stress in the face of lower threshold stimuli (e.g., Perry, Pollard, Blakley, Baker, & Vigilante, 1995; Schore, 2003). Through these processes, early maltreatment also might constrain the child's ability to adapt to new challenging situations with new strategies (Cicchetti & Tucker, 1994).

Several researchers have concluded that, in general, the earlier a child experiences abuse, the more severe the consequences (e.g., Bolger & Patterson, 2003; Manly et al., 2001; Ogawa et al., 1997; Roth et al., 1997; Zlotnick et al., 2008). Manly and colleagues (2001) found that maltreatment limited to the infancy-toddler period predicts poorer outcomes in middle childhood even after subsequent maltreatment was considered. Findings from O'Connor and Rutter's (2000) study of orphaned children indicated that even when severe deprivation is limited to the infancy period, children showed later signs of attachment disorders. Research has shown that childhood abuse is more likely to result in PTSD diagnoses than abuse occurring in adulthood (Zlotnick et al., 2008), and early (preverbal) trauma increases one's risk for PTSD-like symptoms (van der Kolk, 1994). Similarly, studies have shown that abuse at younger ages is related to elevated dissociative symptoms in childhood, adolescence, and adulthood (Anderson & Alexander, 1996; Carlson, 1998; Chu & Dill, 1990; Ogawa et al.). As Ogawa and colleagues' study indicated, children who experience early trauma tend to be exposed also to more severe and chronic trauma, adding another risk factor for disorganization.

Although there is ample theoretical and empirical support that early maltreatment can be particularly detrimental to later developmental outcomes, very early maltreatment

is not more likely than later maltreatment to predict U/d abuse classifications as assessed by the AAI, unless early abuse is followed with later abuse. Very early experiences of maltreatment are not likely to be reported during the AAI; therefore, these experiences would not be scored with respect to U/d abuse states of mind. Because scoring of U/d abuse is generally limited to experiences occurring after age 5 years, individuals whose abuse experiences were limited to infancy or preschool years might be less likely to be classified as U/d abuse. In Weinfield and colleagues (2004) study, using the larger project sample from which the sample for the present study was drawn, abuse occurring during infancy and/or the preschool period was a significant predictor of U/d abuse scores at age 19 years but only before D/d infant attachment scores were entered into the regression analyses. Early abuse added no variance beyond that accounted for with early disorganized attachment.

In summary, we are beginning to gain an understanding of how various maltreatment circumstances impact several later developmental outcomes, but their impact on the organization and/or reorganization of adults' state of mind with respect to abuse is less clear. The few studies investigating potential predictors of U/d abuse status based on retrospective data have yielded mixed findings. The failure of these studies to find that the age of onset or type, severity, or chronicity of abuse is significantly or consistently linked to U/d abuse state of mind classifications might be due in part to the fact that the methods used to assess U/d abuse state of mind make it difficult to determine the impact of the relationship of the perpetrator to the victim, the impact of various types of maltreatment experiences, or the impact of very early or later abuse experiences on

U/d abuse status. Similar findings exist also with respect to the relationship between the circumstances of loss and U/d loss status, however, even though the same methodological issues do not apply. Alternatively, it might not be exclusively the severity, frequency, or duration of a specific type of abuse or other trauma, but the additive influence of all these factors that has the greatest impact on preventing an individual from mentally resolving earlier trauma. This would be consistent with findings from several researchers supporting a cumulative risk hypothesis for predicting negative developmental outcomes in general (e.g., Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Sameroff, 2000). Longitudinal studies in which information of abuse circumstances are gathered prospectively can help us to understand how the various aspects of child maltreatment and other trauma might influence one's ability to resolve earlier experiences of maltreatment.

Dissociation and U/d Abuse State of Mind

Studies of dissociative tendencies and processes might help to explain the development and maintenance of U/d states of mind following trauma. Liotti (2004) has stated that trauma, attachment representations, and dissociation are "inextricably intertwined, like three threads woven into a single strand." (p. 478). Although U/d states of mind and dissociation are not equivalent, they do appear to be similar both phenotypically and in their presumed underlying defensive functions. Like with D/d or U/d representations, dissociation might result as an unconscious and automatic defensive process resulting from a failure to process information in the face of trauma (Bower & Sivers, 1998; Liotti, 1999). Liotti (2004, 2006) has suggested that disorganized responses

to attachment-related trauma are in themselves dissociative processes. This is not to suggest, however, that individuals who demonstrate disorganized attachment representations do or will suffer from dissociative disorders (or vice-versa). There are important differences between these two constructs. For example, what appear to be dissociative behaviors in the responses on AAI transcripts of individuals classified with U/d states of mind are brief and, unlike persons with dissociative disorder, this is not representative of the speaker's overall discourse style (Main & Goldwyn, 1985-2002). The responses from AAI transcripts scored for U/d states of mind are related specifically to traumatic experiences. Therefore, it is possible that individuals who exhibit dissociative-like symptoms when discussing these trauma-related experiences with caregivers are dissociating; however, not all manifestations of dissociation are necessarily related specifically to U/d states of mind regarding attachment-related trauma.

Many researchers have theorized that dissociation might be the mechanism behind U/d states of mind and is what underlies the lapses in monitoring of reasoning, discourse, or behavior found in the transcripts of U/d individuals (Liotti, 1992, 1999, 2004, 2006; Main & Hesse, 1990, Main & Morgan, 1996). Several studies have demonstrated a significant link between U/d states of mind in adolescent and adult samples and higher scores on measures of dissociative symptoms (e.g., Bailey et al, 2007; Hesse & van IJzendoorn, 1998; Riggs, Paulson, Tunnell, Sahl, Atkinson, & Ross, 2007; Stovall-McClough, Cloitre, & McClough, 2008; Stovall-McClough & Cloitre, 2006; West, Adam, Spreng, & Rose, 2001). This link has not been reported consistently across studies, however (e.g., Lyons-Ruth & Block, 1996; Schuengel, Bakermans-Kranenburg,

& van IJzendoorn, 1999). Further, there is some evidence that dissociation is related specifically to U/d abuse but not to U/d loss state of mind (Riggs et al., 2007). . Additional longitudinal studies examining the relationship between dissociation and U/d abuse separately from U/d loss will be useful in investigating further whether and to what extent disorganization mediates the effects of earlier trauma and later dissociation on U/d abuse states of mind.

Dissociation is not thought to be a cause of but possibly another pathway toward later U/d states of mind following trauma. A significant association between childhood maltreatment and dissociative symptomatology in childhood and adolescence has been noted in several studies (Carlson, 1998; Hesse & van IJzendoorn, 1998; Hornstein & Putnam, 1992; Liotti, 1992; Macfie et al., 2001; Ogawa et al., 1997; Sanders & Giolas, 1991). Although the early reliance on a dissociative strategy for coping with maltreatment might impede one's ability to self-organize and self-regulate in the face of future stressers (Cole & Putnam, 1992), Liotti argues that both early disorganization and later trauma are necessary for one to continue to demonstrate dissociation. Following Liotti's premise, disorganized infants who experience no further trauma and experience improved interactions with their parents over time will likely integrate and organize their internal working models. In contrast, if they are predisposed to dissociation and continue to experience severe stressors (especially abuse by a caregiver), they will be more likely to remain disorganized with respect to the earlier abuse. These hypotheses are consistent with a developmental perspective in that both early and later experience will influence outcomes.

Findings from our full project sample revealed that for children who have experienced trauma, disorganized attachment in infancy predicts higher degrees of dissociative tendencies in middle childhood and adolescence (Carlson, 1998; Ogawa et al., 1997). Carlson found that poor early caregiving can have a direct influence on dissociative tendencies, but attachment disorganization also can play a mediating role between early experience and later dissociation. In her study, intrusive and insensitive maternal caregiving behaviors during infancy and early maltreatment (i.e., physical abuse, verbal abuse, psychological unavailability, and/or physical neglect) were related significantly to infant D/d attachment, and D/d ratings were related to higher levels of dissociative symptoms across childhood and adolescence. Ogawa and colleagues found that mean dissociation scores during childhood and adolescence were significantly higher for those participants who were classified as D/d in infancy and who also experienced trauma (i.e., death of an immediate family member, life threatening hospitalization, early extended separation from mother) in childhood and adolescence, compared to participants who either were not classified as D/d or did not experience trauma. The studies by Carlson and Ogawa and colleagues are the only longitudinal studies examining the links between early trauma, early disorganized attachment representations, and later dissociation. No studies (retrospective or prospective) to date have examined the relation between maltreatment, early disorganized attachment representations, dissociative symptoms, and U/d abuse states of mind.

The type or onset of abuse might impact the degree of dissociation experienced by maltreatment victims. For example, sexual abuse, more than physical abuse, is

consistently related to later dissociation (e.g., Briere & Runtz, 1990; Irwin, 1994; Sanders & Giolas, 1991). Also, early age of onset is often associated with more severe dissociative symptoms (e.g., Ogawa et al., 1997). Individuals diagnosed with dissociative disorders tend to report histories characterized with more severe and more types of abuse experiences (Putnam, Helmers, & Trickett, 1993). Other inadequate parenting behaviors that do not qualify as abusive also might play an important role in later dissociative tendencies. Studies have shown, for example, that maternal lack of responsiveness or psychological unavailability toward her infant also predicts dissociation in offspring into adolescence and young adulthood (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005; Ogawa et al., 1997).

In summary, dissociation is possibly another pathway leading towards later U/d abuse outcomes following trauma. Several studies have found strong links between trauma, early disorganized attachment representations, and dissociation. Further, several studies have found a strong link between higher dissociative symptoms and U/d states of mind. Yet no studies have examined the relationship between prospective abuse data, dissociation, and U/d abuse states of mind in adolescence and adulthood.

Important Relationships over Time and U/d Abuse State of Mind

The majority of maltreatment experiences occur within the context of close relationships. As such, important relationships are particularly salient factors to consider when examining the impact of maltreatment on individuals' states of mind. Researchers have reported consistently that positive relationships with consistent and supportive adults are important protective factors that buffer against the effects of maltreatment and other stressors on poor developmental outcomes (Cohen & Wills, 1985; Crittenden, 1985; Farber & Egeland, 1987; Kendall-Tackett et al., 2001; Toth & Cicchetti, 1996; Werner, 2000). Positive relationships with others have been shown even to be an important factor in breaking the intergenerational cycle of abuse (Egeland, Jacobvitz, & Sroufe, 1988). The question remains as to whether relationships with important others over time also impact an individual's ability to mentally resolve earlier traumatic experiences – either by preventing an individual from becoming disorganized when faced with maltreatment or by allowing a restorative opportunity for dealing with earlier trauma. This area of research has been greatly disregarded.

On the one hand, early positive interactions with caregivers might serve as a buffer against disorganization following later trauma. Children with histories of early secure attachment relationships and supportive care are more likely to bounce back from a period of poor adaptation better than children who did not have these positive relational experiences (Sroufe et al., 1990). For example, school-aged children with adaptive histories in infancy demonstrate higher levels of peer competence and emotional health in comparison to those with less competent histories, despite having demonstrated

comparable levels of maladaptation during the preschool period (Sroufe et al.). This appears to be true with respect to disorganization/disorientation also. As stated previously, infants with secure attachments with their caregivers (most often the result of sensitive parenting) are less likely to become disorganized when that caregiver does occasionally demonstrate frightening behaviors (Lyons-Ruth, Bronfman, & Parsons, 1999). On the other hand, poor relationships with the caregiver early on may leave one more vulnerable to disorganization in the face of later trauma. Further, if an individual continues to experience a poor relationship or continued maltreatment with his or her caregiver(s) and is not afforded new positive relational experiences, there will be a greater risk of developing or maintaining a disorganized attachment representation over time.

Lyons-Ruth, Bronfman, and Atwood (1999) argue that an individual's ability to resolve trauma is likely related both to the circumstances of the trauma as well as to "the quality of ongoing comfort, communication, and protection regarding fear-evoking experiences available in important attachment relationships" (p 42). It is possible that a child who experiences maltreatment from one caregiver but experiences stable, responsive, and loving care from another caregiver is more likely than a child who does not have such a positive relationship with a caregiver to develop or maintain an organized internal working model when consolidating all early attachment experiences. The importance of the presence of a stable and supportive attachment figure on the ability of children and adults to develop "normally" following maltreatment has been demonstrated in many studies examining other outcomes (Egeland et al., 1988; Toth & Cicchetti, 1996;

Werner, 2000). A child whose attachment figure fails to provide nurturance, support, and protection of the child from abuse by another, however, might be more likely to develop disorganized states of mind following the abuse. As stated by Steele and Steele (2003) "the memory of an attachment figure who fails to protect the child from the abuse perpetrated by another member of the family may be more painful than the memory of the abuse per se." (p. 116-117). There is some evidence that receiving poor family support after experiencing a stillbirth predicts higher U/d scores related to that loss (Hughes et al., 2004). Similar patterns may exist with respect to the effects of abuse on later U/d abuse status.

Improved interactions with caregivers succeeding maltreatment may allow abuse survivors to make positive changes to their internal working models and to integrate their early traumatic experiences in a coherent, organized manner. There is some empirical evidence suggesting that the quality of care a child receives after trauma might be as, if not more, important to later development than is the actual initial trauma (Alexander & Anderson, 1997; Harris, Brown, & Bifulco, 1986). Maternal support (i.e., believing, supporting, and protecting the child) at the time of discovering their child's abuse is related to decreased harmful emotional consequences for the child (Everson, Hunter, Runyan, Edelsohn, & Coulter, 1989). Although this finding is not specific to attachment representations, it fits theoretically with Bowlby's (1969/1982) hypothesis that disorganization results when the attachment system is fearfully activated but not clearly resolved, as well as with Solomon and George's (1999) theory that disorganized attachment representations most likely result when caregivers fail to alleviate or repair

their child's distress. Although the degree of support a parent provides to a child following abuse might prevent or promote the child's successful mental and affective resolution of the earlier traumatic experiences, this has yet to be examined empirically.

New attachment relationships also can alter one's early attachment representations. For example, in a study of children in foster care, Dozier and colleagues found that children who received deficient early care (often including maltreatment) and then were placed early on with a foster mother with insecure attachment representations were at a greater risk for developing disorganized attachment representations; however, the children who were placed with a foster mother with a secure/autonomous attachment representation also were able to form organized and secure attachment representations with their new caregivers (Dozier, Stovall, Albus, & Bates, 2001). These findings suggest that new important relationships following trauma either can serve as another risk factor for continued disorganization or as a protective factor toward organized attachment representations.

Several findings from our larger sample of high-risk families (many of whom experienced maltreatment) suggest that later parenting and quality of family functioning can significantly influence or alter one's security of attachment representations (i.e., secure vs. insecure) in late adolescence or adulthood (Ogawa & Weinfield, 1997; Roisman, Padron, Sroufe, & Egeland, 2002; Sampson, 2005; Weinfield & Whaley, 1999; Weinfield et al., 2004). It remains unclear, however, whether similar parent-child interaction patterns also will influence the change or maintenance of a U/d abuse state of mind.

As children grow older and begin to experience more interactions with others outside of the family setting, peer relationships become an increasingly important influence on their development. These new relationships may serve a role in helping the individual to overcome earlier abuse experiences; however, for many maltreated children, the poor relationships they develop with their caregivers early on often make it difficult for them to subsequently develop healthy relationships with others (Erickson, Sroufe, & Egeland, 1985, Sroufe & Fleeson, 1986). Maltreated children tend to be less popular and experience more rejection from peers (Bolger & Patterson, 2003; Dodge, Pettit, & Bates, 1994). Also, compared to children with secure attachment histories, children with insecure or disorganized early attachment relationships are more likely to experience problematic interactions with teachers and peers (Troy & Sroufe, 1987), to exhibit hostile and aggressive behavior (Lyons-Ruth, 1996), and to be less competent in play and conflict resolution with peers (Wartner et al., 1994).

As children near adolescence and adulthood, romantic partners might become important for promoting or preventing the successful integration of traumatic attachment-related experiences into an organized state of mind. Positive relationships with others at this developmental period might provide a secure base both for helping individuals with maltreatment histories to reconstruct or replace familiar yet ineffective patterns of interacting with others and for allowing them to explore and work through childhood maltreatment experiences. Many researchers have shown that involvement with a securely attached partner can alter one's attachment representations from insecure to secure (Cohn, Silver, Cowan, Cowan, & Pearson, 1992; Roisman, Madsen,

Hennighausen, Sroufe, & Collins, 2001; Sampson, 2005). For example, in our larger study, higher quality romantic relationships at age 23 predicted the transition from insecure to secure attachment representations from ages 19 to 26 years (Sampson, 2005). Individuals with U/d states of mind are often less likely to engage in relationships that would allow for the resolution of earlier trauma, however. For example they are more likely to marry other individuals with U/d states of mind (van IJzendoorn & Bakermans-Kranenburg, 1996, 2008). Further, U/d representations are linked to extreme problems in adult romantic relationships (Creasey, 2002; Crowell et al.). Individuals with U/d states of mind are more likely to exhibit negative and controlling behavior toward their partner, especially when the individual's secondary AAI classification is insecure (Creasey).

Positive relationship experiences with others appear to be more influential to changing organized states of mind from insecure to secure than they are lowering U/d states of mind scores, however (Crowell et al., 2002; Levy, Meehan, Kelly et al., 2006). Crowell et al.'s study found that participants whose AAI classifications switched from insecure to secure following marriage were significantly more likely to report more positive feeling about their partner and relationship, but this was not the case for participants whose U/d classifications changed over time. Levy and colleagues found also that transference-focused therapy was effective in significantly reducing rates of insecure AAI classifications but not in reducing rates of U/d classifications in an adult sample of patients diagnosed with borderline personality disorder. Dialetical behavior therapy or a modified psychodynamic supportive psychotherapy also was not effective in changing U/d states of mind in their study sample.

In summary, there is a great deal of evidence that supportive relationships over time can promote more positive developmental outcomes, including secure attachment representations. Yet, the role that relationships play in influencing whether or not individuals are able to overcome abusive histories and integrate those experiences into a coherent, organized state of mind remains unclear.

Conclusion of Literature Review

The large majority of studies has relied on retrospective data of abuse and has produced inconsistent findings regarding the role of maltreatment circumstances, important relationships over time, and dissociative symptoms on U/d abuse status. The few studies thus far that have relied on prospective data from childhood (Weinfield et al., 2004) have, however, found a significant link between D/d attachment scores and U/d abuse scores in late adolescence.

Although the preceding literature review was organized so that the potential impact of early attachment representations, maltreatment circumstances, dissociation, and important relationships over time were discussed separately, these factors are not expected to have completely separate influences on U/d abuse states of mind. Development is a cumulative, dynamic and complex process in which development in one area interacts with development in other areas (Smith & Thelen, 1993). Further, as Carlson, Sroufe, and Egeland (2004) have shown, an interactive influence exists between behavior and representation over time, such that early caregiving experiences directly influence both relationship representation and social behavior in early childhood, and

previous representations and social behaviors predict later representations, social behaviors, and socioemotional functioning.

A developmental pathways model provides a useful framework for understanding the effects of maltreatment from a developmental perspective as well as for understanding the processes that may influence the initiation, maintenance, or disruption of a particular pathway of disorganized attachment representations following abuse. From this perspective, each phase of development is influenced by both past and current experiences (Sroufe & Rutter, 1984), but early experiences are thought to be of special importance because they provide the foundation for later development (Bowlby 1969/1982, 1973; Sroufe, Carlson, Levy, & Egeland, 1999). This does not mean, however, that early experiences dictate later experiences. Because development is influenced by complex, bidirectional interactions at various levels over time (e.g., Bronfenbrenner, 1977; Carlson et al., 2004), change is always possible and there can be great diversity in outcomes. There are numerous individual patterns of adaptation that one can potentially pursue; however, certain pathways become more or less likely due to one's earlier experiences and current circumstances (Sroufe, 1996).

One concise conceptual model of how the factors addressed in this literature review may lead to U/d abuse state of mind is as follows: Early maltreatment and/or other frightening parental behaviors can begin an early pathway leading to a series of poor outcomes. The infant is at risk for developing disorganized attachment representations, dissociative tendencies, and poor emotional regulation skills. The lack of emotional regulation skills, disturbances in self-system processes, and the tendency to cope with

fear via dissociation leaves the child more vulnerable to dissociative responses in the face of future trauma. A history of maltreatment and poor attachment relationships can lead to distorted expectations regarding reciprocity in relationships, that in turn may interfere with the formation and/or maintenance of positive relationships with others (e.g., parents, peers, and/or romantic partners) that may otherwise help one to overcome earlier abuse experiences (e.g., Jacobvitz & Hazen, 1999; Weinfield, Sroufe, Egeland, & Carlson, 1999). All of these factors may work together to leave the individual more prone to U/d states of mind following earlier trauma.

Chapter 3: Aims and Hypotheses of the Current Study

As evidenced by the preceding literature review, there are several questions that remain unanswered about the etiology, development, and nature of U/d states of mind that can be examined adequately only with prospective, longitudinal studies, such as the present study. The goals of this study were to determine the rates of U/d abuse classifications in a male and female sample with prospectively identified histories of childhood abuse and to investigate specific hypotheses concerning various factors that are significantly related to or predictive of resolved and U/d abuse states of mind in late adolescence and adulthood.

The first question is related to the rates of U/d states of mind classifications: ***What percentage of individuals with maltreatment histories demonstrates U/d abuse states of mind at age 19 or 26 years when child maltreatment experiences are identified prospectively?*** A paucity of longitudinal studies with prospective data of childhood abuse to date has prevented us from answering this question. It was expected, however, that there would be a slightly higher percentage of individuals with U/d abuse classifications at age 19 compared to at age 26, because by age 26 individuals will have had 7 more years removed from the abuse experience(s) whereby they might be able to resolve any disorganizing effects on their state of mind. No gender differences with respect to the percentage of U/d abuse classifications or rates of change or stability were anticipated based on findings reported in previous studies (Crowell et al., 2002; van IJzendoorn & Bakermans-Kranenburg, 1996).

The second question involves the role of early attachment representations on later U/d states of mind following trauma: ***Do early attachment representations leave one more or less likely to be classified as U/d abuse following later maltreatment?*** Based on attachment theory and previous empirical findings (i.e., Weinfield et al., 2004), it was hypothesized that for participants who were physically and/or sexually abused in childhood, those with D/d attachment representations in infancy would be more likely than expected to be U/d with respect to abuse, and those who had secure attachment representations in infancy would be somewhat less likely than expected to be U/d abuse. It was hypothesized also that participants who were both D/d and insecure as infants would be more likely than those who were D/d and secure during infancy to be classified later as U/d abuse.

The third question considers the relationship between the circumstances of trauma and U/d states of mind: ***Are the specific circumstances of childhood trauma significantly related to U/d abuse status in adolescence and/or adulthood?*** Although findings from general outcomes research suggest that the circumstances of maltreatment have differential effects to developmental outcomes, these factors have not been shown to be as influential to U/d states of mind with respect to childhood abuse or loss (Ainsworth & Eichberg, 1991; Lyons-Ruth et al., 2003; Stovall-McClough & Cloitre, 2006). Therefore, it was expected that in this study the circumstances of physical and/or sexual abuse (i.e., type, age of onset, or chronicity) alone would not be significantly related to U/d abuse classifications at 19 and/or 26 years.

The fourth question concerns the relationship between dissociative symptoms and later U/d states of mind: ***In a maltreatment sample, are higher levels of dissociative symptoms in childhood and adolescence predictive of a higher likelihood of demonstrating more notable signs of U/d abuse in late adolescence and/or adulthood?*** Based on attachment theory and research linking dissociation with maltreatment and overall U/d states of mind, it was expected that participants who demonstrated more severe signs of dissociation during childhood and/or adolescence would be significantly more likely to be classified as U/d with respect to abuse compared to participants who demonstrated fewer dissociative symptoms. Following Liotti's theory, it was expected that experiencing both higher levels of dissociation and more severe trauma would be a better predictor of U/d abuse status than experiencing either dissociation or more severe maltreatment trauma alone.

The fifth question is related to protective factors: ***Are positive and supportive relationships with parents, friends, and/or romantic partners predictive of one's ability to maintain an organized state of mind or to become resolved with respect to childhood abuse experiences?*** It was expected that those individuals who had positive and supportive relationships with important others over time (operationalized in this study as higher scores for maternal sensitivity and supportive care during infancy and early childhood, family functioning in early adolescence, security of friendship during the middle and late adolescent years, and quality/security of romantic relationships in late adolescence and early adulthood) would be significantly less likely than those individuals

without these positive and supportive relationship experiences to demonstrate later U/d abuse classifications.

Finally, the question of how the above variables work together to influence U/d abuse states of mind following childhood maltreatment will be investigated: ***Do infant attachment representations, dissociative symptoms, and interpersonal relationships with parents, friends, and romantic partners over time work together to influence state of mind outcomes following childhood abuse?*** Following a developmental pathways model, whether or not child maltreatment will predict later U/d abuse states of mind is likely to depend not only on the circumstances of the abuse, but also on an individual's experiences before and following the abuse. In addition, theoretical and empirical support for a cumulative risk hypothesis found across several studies for examining other developmental outcomes (e.g., Appleyard et al., 2005; Sameroff, 2000) warranted the expectation that the more risk factors are present, the more likely individuals who have experienced maltreatment will demonstrate a U/d abuse state of mind at age 19 and/or 26 years.

Although a small sample size prevents the conducting of analyses to identify pathways to U/d abuse classifications, a conceptual model of one hypothesized pathway to U/d abuse state of mind classifications is provided in Figure 1.

Insert Figure 1 about here

Chapter 4: Method

Participants

Participants were drawn from the Minnesota Parent-Child Longitudinal Study, an ongoing study of low SES families (original N = 267; see Egeland & Brunquell, 1979). The mothers of the participants were recruited through public health clinics during their third trimester of pregnancy. Their children were followed from birth until adulthood. The sample of participants used in the present study (n = 42; 19 males, 23 females) is limited to those individuals who were determined (using prospective data) to have experienced childhood physical and/or sexual abuse at the hands of a caregiver by the age of 17.5 years and for whom scores from the Adult Attachment Interview for U/d abuse state of mind were available at age 19 and/or 26 years. The racial/ethnic background of this subgroup of participants is approximately 67% Caucasian, 7% African American, 21% multiracial, 2% Native American or Hispanic, and 2% unknown.

General Procedure

Data were gathered during infancy, childhood, adolescence, and adulthood. Assessments consisted of videotaped laboratory procedures, systematic observations, interviews, and questionnaires completed by participants and their mothers and teachers. Due to a limited sample size in this study, whenever possible, data were combined in order to make use of more available information and to limit the number of variables used in analyses.

Measures

State of mind classifications. AAIs were administered to participants at ages 19 and 26 years. All transcripts were audiotaped and transcribed verbatim, but during the transcription process all identifying information was removed from the transcripts. Coding was completed using the Main and Goldwyn (1998) coding system. All coders completed training and passed all the reliability tests provided by Mary Main and Eric Hesse. At age 19 years inter-rater agreement on 49 randomly selected cases was 82% across the three major classifications (kappa = .67, p <.001) and 90% for unresolved status (kappa = .65, p <.001) (Weinfield et al., 2004). At age 26 years inter-rater agreement on 44 randomly selected cases was 83% across the three major classifications (kappa = .75, p <.001; Sampson, 2005) and 80% for unresolved status (kappa = .59, p <.001). The coders for all cases were unaware of the participants' histories, including any attachment information that was available from previous assessments. All disagreements on reliability cases were resolved by reaching a consensus through conferencing or by consulting with a third coder.

For this study analyses of U/d abuse states of mind were limited to U/d scores related to childhood physical and sexual abuse committed by caregivers only. The highest U/d abuse score from the AAI at age 19 or 26 was used, and following procedures generally used by other researchers, scores of 5 or higher (from a scale of 1-9) were designated as U/d abuse. Because a score of 5 is considered only "possible disorganization," scores of 6 were used in analyses if cell sizes were large enough. Alternative classifications of secure/autonomous, insecure/dismissing, and

insecure/preoccupied also were used in analyses investigating the relationship between organized and U/d states of mind.

Childhood physical and sexual abuse. Instances of maltreatment were identified prospectively from birth to age 17.5 years via staff observations during assessments completed in the home and laboratory, reports from Child Protective Services, interviews with parents, teachers, and participants, and detailed file reviews of interviews and questionnaires completed by parents, teachers, and participants (Pianta et al., 1989; Huston, 2001). For this study, a final prospective maltreatment list was formed by combining information from several previously created lists of early and later maltreatment. Evidence of physical and/or sexual abuse on any list resulted in inclusion in this study. The early abuse lists, which included information of physical abuse, sexual abuse, emotional unavailability, and neglect occurring from birth to 24 months and 24 to 64 months of age (Pianta et al.), have been used in numerous studies from this project regarding the effects of early maltreatment. A later maltreatment list, including information of physical and sexual abuse was created by examining interviews conducted with parents, teachers, and the participants during the participant's elementary and high-school years (Huston, 2001). Using the coding scheme developed by Barnett, Manly, and Cicchetti (1993), trained coders reviewed each participant's file in detail and recorded information relevant to maltreatment. Criteria used to identify the physical and sexual abuse groups were consistent with state maltreatment statutes. Nearly all early cases of maltreatment were corroborated with Child Protective Services' reports. For later periods, when information was provided by the participant, corroboration from someone other

than the participant (such as a caregiver or teacher) was needed for inclusion on the maltreatment list. For determining inter-rater reliability, two independent raters coded 10 percent of the total sample of 170. Inter-rater reliabilities for physical abuse and sexual abuse are kappa = .81 and .85, respectively (Huston).

For this study, the characteristics of abuse examined included type, onset, and chronicity. Because all participants were abused by attachment figures, the influence of the relationship between the victim and the perpetrator was not examined in this study. For type of abuse, which included abuse experienced at any time up to 17.5 years, participants were categorized 1 for experiencing physical abuse only, 2 for sexual abuse only, and 3 for both physical and sexual abuse. For onset of abuse, participants were categorized 1 if the abuse began prior to 2 years of age, 2 if abuse was reported as beginning between 24 and 64 months of age, and 3 if abuse was reported as beginning after 64 months of age. For chronicity of abuse, using the same time periods established for onset of abuse, participants were categorized 1 if they were included in an abuse group at only one time period, 2 if they were in an abuse group at two time periods, and 3 if they were in an abuse group at each time period.

Early attachment representations. The Strange Situation laboratory procedure (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth & Wittig, 1969) was completed with mother-child dyads when the participants were 12 months and 18 months old. Each assessment was videotaped, and trained coders viewed the pattern of infant behavior displayed during the separation and reunion episodes with his/her caregiver in order to establish the quality of attachment and degree of organization/disorganization exhibited

by the infant. Using the system developed by Ainsworth and colleagues (Ainsworth et al.), two independent researchers initially coded the videotapes according to the three organized classifications: secure, insecure-avoidant, and insecure-resistant. Each coder was trained and had established reliability with L. Alan Sroufe. Inter-rater agreement across these classifications was 89% at 12 months and 93% at 18 months. Once the D/d attachment scoring system was developed by Main and Solomon in 1990, the videotapes that were still available and of satisfactory quality by then were coded for signs of D/d attachment by researchers trained by and reliable with Mary Main. For reliability purposes, 35 videotapes were selected randomly and scored by a second coder, who was also trained by Mary Main. Inter-rater agreement for disorganization was 86% (kappa = .72). See Carlson (1998) for further details regarding infant disorganization coding. The coders for all cases were unaware of participants' histories, including any attachment information that was available from previous assessments. For all cases, any disagreements were resolved through conferencing.

For purposes of this study, the highest D/d score from either the 12- or 18-month assessments was used when scores were available at one (n = 22) or both times (n = 12). If no disorganization scores were available at either 12 or 18 months (n = 7), scores from the 24-month assessment was used. The decision to include 24-month disorganization data was adopted because several of the Strange Situation tapes were not of sufficient quality for later D/d coding. This measure of D/d status has been used by several other researchers from this research project (e.g., Weinfield et al., 2004). A dichotomous

variable designating an organized (0) versus D/d (1) classification was created. If at any time an infant's D/d score was 5 or higher (on a scale of 1-9) it was considered D/d.

For analyses including information from organized attachment classifications, a dichotomous variable designating secure (0) vs. insecure (1) classifications was created. If classifications were the same across the 12- and 18-month Strange Situation assessments, that classification was used. For participants whose classifications differed between the 12- and 18-month assessments, the 12-month classification was used, because the Strange Situation procedure was initially intended for use with this age group.

Dissociative symptomatology. Measures of dissociation were gathered at various time periods from infancy to late adolescence using self-report checklists and interviews completed by mothers, teachers, and participants. Mothers completed the Preschool Behavior Questionnaire (Behar & Stringfield, 1974) and the Child Behavior Checklist (CBC; Achenbach & Edelbrock, 1983). Teachers completed the Teacher Report Form of the CBC (Edelbrock & Achenbach, 1984). Participants were administered the Youth Self Report Form of the CBC (Achenbach & Edelbrock, 1987), the Dissociative Experiences Scale (Bernstein & Putnam, 1986), and the Child Schedule of the Affective Disorders and Schizophrenia diagnostic interview (Puig-Antich & Chambers, 1978). Individual items thought to reflect dissociative symptomatology were drawn from each of these measures. For additional information regarding the procedures used, see Ogawa et al., 1997. Advanced graduate students who were trained and supervised by two clinical psychologists administered and scored 30 of the diagnostic interviews to establish

reliability (kappa = .93; Ogawa et al.). For purposes of this study, scores from each time point were transformed into z-scores. Next, the mean of those z-scores were calculated for participants for whom scores were available for at least seven of the eleven assessments. Higher scores reflect higher levels of dissociation.

Other forms of maltreatment. Because instances of physical and sexual abuse only are coded on the AAI, a separate variable was created to represent other forms of abuse committed by a caregiver. Instances of physical neglect, psychological unavailability, and verbal abuse were identified prospectively via staff observations during assessments completed in the home and laboratory, reports from Child Protective Services, interviews with parents, teachers, and participants, and detailed file reviews (Pianta et al., 1989; Huston, 2001). Data regarding physical neglect was obtained up to age 17.5 years. Information regarding psychological unavailability was obtained up to 64 months. Information regarding verbal abuse was obtained up to 24 months. In addition, information regarding witnessed domestic violence was obtained from several interviews with the participants' mothers when the participants were between 1 year of age and sixth grade (Dodds, 1995; reliability r = .95; n = 50). For determining inter-rater reliability for other abuse, two independent raters coded 10 percent of the total sample of 170. Inter-rater reliability for all types of maltreatment was kappa = .86 (Huston, 2001).

For purposes of this study, two types of abuse variables were created. First, a dichotomous variable was created to identify participants who did experience one or more other forms of maltreatment in addition to physical and/or sexual abuse (1) from those who did not (0). Second, a continuous measure of other abuse was computed by

adding one point for each: physical neglect, psychological unavailability, verbal abuse, or witnessing domestic violence. These continuous other abuse scores (combined with information regarding physical and sexual abuse) were used in analyses involving the severity of abuse on state of mind outcomes.

Early maternal sensitivity and supportive care. A composite measure of the overall level of maternal emotional support and sensitivity was drawn from observational assessments of mother-child interactions across ages 6 months, 24 months, and 42 months. At 6 months of age, systematic observations of mother-infant dyads occurred in the participants' homes during two 30-minute feeding sessions and a 20-minute play interaction. Mothers were rated by trained graduate students according to Ainsworth's 9-point Sensitivity to Infant Signals Scale (Ainsworth, 1970). This scale was intended to capture the degree that the mother was aware of and responded appropriately to her infant's cues, such as the infant's desire to interact socially, to eat, or to be soothed or comforted. Using Tinsley and Weiss's (1975) T index of agreement across 24 randomly selected cases, inter-rater reliability for this sensitivity scale was .66.

At 24 and 42 months of age, participants were videotaped in the laboratory with their mothers while participating in a series of problem-solving tasks. At 24 months, mother-child dyads participated in a tools task (Matas, Arend, & Sroufe, 1978), whereby the toddler was challenged to use various tools to retrieve visible rewards from inside a plexiglass box. At 42-months, mother-child dyads were observed during a set of teaching tasks adapted from a procedure developed by Block and Block (1980), where the toddler was challenged to replicate a block design, name objects, sort a matrix, and use an Etch-

a-Sketch to trace a maze. For both assessments, the tasks were difficult for the child and required the mother's assistance to complete. The tasks were intended to challenge the toddler and to tax the dyad's coping strategies in order to assess how the mother responded to her child's frustration or distress.

The videotapes from both laboratory assessments were scored by trained coders for several parenting behaviors. A Supportive Presence scale of maternal behavior across these two assessments was used for this study. This 7-point scale reflects the degree to which the mother was attentive to and served as a secure base for her child. This included helping the child feel comfortable with the task, providing encouragement of the child's efforts, and offering patient emotional support and reassurance when the child began to show signs of growing frustration. Inter-rater reliability (intra-class correlation) between two independent coders for 24- and 42-month supportive presence was .72 and .87, respectively. Any discrepancies were resolved by conferencing the scores.

A composite score assessing the overall level of sensitivity and supportive care provided to the child early on by his or her mother was created by combining the Sensitivity to Infant's Signals score at 6 months and Supportive Presence scores from both the 24- and 42-month assessments. First, the scores were transformed into z-scores. Next, the mean of those z-scores were calculated for participants for whom scores were available for at least two of the three assessments. A higher score for early maternal care indicates a better overall quality of parenting.

Family functioning in early adolescence. When participants were 13 years old, they were videotaped with their mothers (and fathers when available) in a laboratory

assessment designed to examine quality of family functioning. For this assessment, families were asked to participate in four discussion and problem-solving tasks: (1) developing an anti-smoking campaign; (2) assembling a puzzle together while the parent was blindfolded and receiving directions from the adolescent; (3) discussing the potential results of an imaginary event; (4) completing a Q-sort task describing the qualities of the "ideal" person. Each dyad was assigned a score for three "Balance Scales" (J. Sroufe, 1991) which are intended to assess how well the family balances multiple functions of their relationship roles. For these scales, the degree to which each dyad or triad demonstrated the following was rated: individuals' comfort with their respective roles, enjoyment in participating in the relationship, naturalness and spontaneity within the relationship, the family's ability to work together to meet the task demands, to support the development of the individuals involved, and to balance individual and relationship needs. Better family functioning is reflected by higher ratings. Inter-rater reliability between two coders' scores across all scales ranged from Pearson r coefficients of r = .40 to r = .70, with a mean reliability of r_I = .61 (Weinfield et al., 2004). For the proposed study, a composite score assessing a broad index of the quality of family functioning was yielded by summing the three Balance Scale scores. This composite has been used in several other studies from our project examining family factors related to adult attachment classifications (e.g., Sampson, 2005; Weinfield et al., 2004)

Friendship security in middle and late adolescence. At age 16 and 19 years, participants were interviewed about their closest friendship. They were asked to describe how their friend treated them and to comment on several negative and positive emotional

experiences within the friendship. Each interview was audiotaped and coded by at least two trained observers on several scales. Based on their responses, the security of their friendships was rated according to a 7-point scale. This scale assessed the degree to which the participants felt that they could be themselves wholly, could be accepted by their friend, and that their friend would be available to them in times of need. At age 16, inter-rater reliability (intra-class correlation coefficients) between two independent coders for this scale was .74. At 19, inter-rater reliability (intra-class correlation coefficients) between independent coders was .67. Ratings for these two scales were averaged together to create a composite friendship rating ($\alpha = .98$). Higher scores reflect more favorable friendships.

Romantic relationship quality in late adolescence. Romantic relationship quality has been operationalized previously in this research project using a composite measure of quality and security (Sampson, 2005). At age 19 years, participants who were currently involved in a steady romantic relationship lasting at least 2 months completed a semi-structured dating interview. Based on their responses to a series of open-ended questions, they were rated on the degree of security and overall quality of their romantic relationship. The Security Scale assesses the participants' belief that they can express emotional vulnerability, that their partner will accept them, and that they can depend on their partner for emotional support. The Overall Quality Scale assesses the degree to which the participants feel positively about the relationship and the relationship promotes the individuals' growth. For both scales, higher scores reflect more optimal relationships. Each participant's responses to questions from the relationship interview were rated using

a 7-point scale. Inter-rater reliabilities for Romantic Relationship Security and Overall Romantic Relationship Quality were .96 and .98, respectively. Ratings for these two scales were averaged together to create a composite age 19 romantic relationship rating ($\alpha = .95$).

Romantic relationship quality in early adulthood. At age 23 years, participants involved in a current romantic relationship again completed a semi-structured interview regarding their relationship; this interview was similar to the interview described used at age 19 years. Based on the participant's responses to the interview questions, the security and overall quality of relationship was rated according to a 5-point scale. Inter-rater reliabilities for Romantic Relationship Security and Overall Romantic Relationship Quality were .89 and .94, respectively. Ratings for the two scales were averaged together to derive a composite age 23 romantic relationship rating ($\alpha = .94$). Higher scores indicate higher levels of romantic relationship quality and security.

Cumulative risk. A cumulative risk variable was created by first assigning one point for each of the following: 1) D/d infant attachment representation; 2) scores at least one standard deviation below the mean for maternal support; 3) scores at least one standard deviation below the mean for family balance; 4) scores at least one standard deviation above the mean for dissociation; 5) scores at least one standard deviation below the mean for friendship security; 6) scores at least one standard deviation below the mean for romantic relationships at age 19; 6) scores at least one standard deviation below the mean for romantic relationships at age 23; 8) insecure attachment representations in adolescence; 9) insecure attachment representations in adulthood, 10) for each type of

abuse experienced, and 11) for number of abuse lists included on over time. Next, all points were summed to create an overall cumulative risk variable, with higher scores reflecting higher levels of risk.

Chapter 5: Results

Analyses were conducted in several segments. First, descriptive statistics for all dependent and independent variables were calculated. See Table 1 for the frequencies, means, standard deviations, and ranges. Intercorrelations for continuous independent variables were calculated (See Table 2). Rates of U/d abuse were determined along with the degree of change from adolescence to adulthood. Next, analyses were completed in order corresponding to each remaining study question.

Chi-square analyses were used to examine the relationships between categorical variables and U/d abuse state of mind status. Unless otherwise noted, Likelihood ratios (two-sided) were reported for chi-square analyses. In chi-square analyses where any expected cell frequencies were below five, Fisher's Exact Test was used. Logistic regression analyses were used to test the ability of individual continuous variables and the interactions between variables to predict U/d abuse status. Because of the small sample size, in order to maintain at least 10 cases per predictor variable in the model, as recommended by Field (2005), it was not possible to enter all variables into a single regression analyses to test complex conceptual models. Instead, separate regressions were run to test specific hypotheses. When appropriate, Bonferroni corrections were implemented to control family-wise error rates (the probability of a Type I error).

Insert Table 1 about here

Insert Table 2 about here

U/d scores and status across assessment periods

Using the criteria of scores at 5 or above indicating U/d abuse state of mind, half of all participants were classified as U/d abuse at age 19 and/or 26 years. Of those participants who reported applicable trauma during the AAI and for whom U/d abuse scores could be provided, approximately the same percentage of individuals at age 19 (44%) and age 26 (43%) were classified as being U/d with respect to abuse. A breakdown of U/d abuse scores across both ages is provided in Table 3.

Insert Table 3 about here

All study participants received a U/d abuse score at either 19 or 26 years, but several participants did not receive a score for U/d states of mind regarding abuse at either age 19 years (n = 14) or age 26 years (n = 5). Although all study participants were identified by prospective data as having experienced childhood sexual and/or physical abuse, during administration of the AAI at age 19, only approximately 80% of the participants (33 of 41) reported clearly experiencing one or more instances of abuse. At age 26, 93% of the participants (37 of 40) clearly reported experiencing childhood abuse. This difference may be due to differences in interviewing quality between the two assessment periods.

Only 20 participants had U/d abuse scores available at both 19 and 26 years. Of those, more participants remained in their respective state of mind categories (i.e., U/d or Resolved) (65%; n=13) than participants who changed status (35%; n=7). This difference was not significant ($\chi^2(1) = 2.16$, $p = .20$, Fisher's Exact Test, two-sided), but cell sizes were extremely small. Table 4 provides information regarding U/d classifications across ages 19 and 26 years. Approximately the same number of participants remained classified as U/d abuse (n=6) as remained classified as resolved with respect to the abuse (n=7). Of the participants whose U/d abuse status changed from 19 to 26 years, a slightly greater number of participants switched from organized (resolved) at 19 to U/d abuse at 26 (n = 5) than switched from U/d abuse to organized (resolved) (n=2). Although the results deserve further investigation of the reasons for change, additional analyses were not possible due to extremely small cell sizes.

Insert Table 4 about here

The percentage of insecure/dismissing classifications in this maltreatment sample at age 19 years (35%) was just slightly higher than at 26 years (31%) but lower than the percentage of participants from the full project sample at those ages (56% at 19 and 38% at 26). Chi-square analyses indicated that participants with insecure/dismissing classifications were not significantly more likely to deny abuse history during the AAI at either age [($\chi^2(1) = .90$, $p = .44$; ($\chi^2(1) = .74$, $p = .69$)], to provide insufficient information

for scoring of U abuse states of mind ($\chi^2(1) = 3.64$, $p = .09$), or to not be classified as U/d abuse at either age [($\chi^2(1) = .03$, $p = 1.0$; ($\chi^2(1) = .90$, $p = .47$)].

Chi-square tests for independence revealed no significant gender differences in U/d abuse status at age 19 ($\chi^2(1) = .07$, $p = .80$) or at age 26 for this sample ($\chi^2(1) = .97$, $p = .32$). There were no gender differences in whether any childhood abuse experiences were reported during the AAIs (or the information was not sufficient for determining certainly whether abuse occurred) at age 19 years ($\chi^2(1) = 1.04$, $p = .44$) or at age 26 years ($\chi^2(2) = 2.84$, $p = .14$).

D/d infant attachment representations and U/d abuse status

A breakdown of the D/d scores during infancy is provided in Table 5. Approximately 43% (n = 18) of this sample was classified as D/d at one or more assessment periods (i.e., 12, 18, or 24 months). This percentage is high compared to rates from normal, nonclinical, middle-class samples (14%; van IJzendoorn et al., 1999), but low compared to rates from other maltreatment samples (82%; Carlson et al., 1989).

Insert Table 5 about here

The percentage of infants whose attachment representation was scored as D/d varied widely across assessment periods. At 12 months, 36% of participants with available D/d scores (n=10) were classified as D/d. At 18 months, 61% of those with available scores (n=11) received D/d classifications. For the 7 participants for whom D/d scores were available at 24 months only, a single participant (14%) was classified as D/d.

This pattern of increase in D/d classifications at 18 months from 12 months is consistent with findings from other high-risk samples (e.g., Lyons-Ruth et al., 2003) and from the larger study sample (Carlson, 1998; Weinfield et al., 2004), but the rates of D/d at 18 months are notably higher in this maltreatment sample (i.e., 61%) compared to the larger study sample from which this sample was drawn (i.e., 40% - 43%) when the same methods of identifying D/d classifications across infancy were employed.

Of the 11 participants who had D/d scores available at both 12 and 18 months, 4 were stably classified as D/d at both time periods, and 3 were stably classified as organized at both times. Of the 5 participants whose D/d status changed from 12 to 18 months, only 1 was classified as D/d at 12 months but not at 18 months, and 4 were not classified as D/d at 12 months but were classified as D/d at 18 months. These patterns of change in D/d classifications also were consistent with what was found in the larger study sample (Carlson, 1998).

Chi square analyses examining the relationship between infant disorganized status and U/d abuse status at age 19 and/or 26 years revealed marginally significant results (Fisher's Exact Test $\chi^2(1) = 3.06$, $p = .08$, one-sided). Results are provided in Table 6. Examination of the cell values revealed that participants were more likely than expected by chance to be classified as U/d abuse if they were classified as D/d in infancy and less likely to be classified as U/d abuse if they were not classified as D/d in infancy. When examining the relationship between infant D/d and U/d abuse separately at ages 19 and 26 years, a highly significant link between D/d and later U/d abuse was found at 19 years (Fisher's Exact Test $\chi^2(1) = 7.46$, $p = .009$, one-sided) but not at 26 years ($\chi^2(1) = .93$, p

=.27, one-sided).

Insert Table 6 about here

More than half (52.5%) of the infants in this study were classified at 12 months as having a secure attachment representation. Of those infants in this sample with D/d classifications, approximately 44 percent had secondary secure classifications in infancy and 56 percent were classified as insecure. This high rate of secure attachments among infants with D/d attachment representations compared to rates of security reported across other samples of infants with D/d classifications (14%; van IJzendoorn et al., 1999) is likely because, for this study, D/d and secure classifications may have been obtained at different times (i.e., participants were classified as having a D/d attachment history if they had a score at or above 5 at either the 12-, 18-, or 24-month assessments, but information about security of attachment was more likely to be obtained from the 12-month assessment). Chi square analyses indicated that security of attachment in infancy was not significantly related to U/d abuse status at age 19 and/or 26 years ($\chi^2(1) = 1.18$, $p = .28$, two-sided). See Table 7.

Insert Table 7 about here

Chi square analyses examining the combined influence of infant security and organization status on later U/d states of mind indicated that being both insecure and

disorganized in infancy was not related to significant increases in participants' chances of being U/d with respect to abuse at ages 19 and/or 26 (Fisher's Exact Test $\chi^2(1) = .28$, $p = .49$, two-sided). See Table 8. Again, the results were based on extremely small cell sizes. Results remained insignificant when examining U/d abuse classifications separately for ages 19 and 26 years.

Insert Table 8 about here

Maltreatment circumstances and U/d abuse status

Type: In this sample, 18 participants were identified prospectively as experiencing physical abuse only, 17 participants as experiencing sexual abuse only, and 7 participants as experiencing both physical and sexual abuse. Findings from chi-square analyses used to assess the relationship between type of abuse identified prospectively (i.e., physical abuse, sexual abuse, or both) and U/d abuse status at 19 and/or 26 were not significant ($\chi^2(2) = 1.86$, $p = .39$).

Onset: For the majority of participants (n = 22), the onset of abuse experiences was recorded as occurring after 64 months. For 11 participants, the onset of abuse was recorded during the preschool period. For 9 participants, the onset of abuse was first recorded as occurring during infancy. Chi squares examining the relationship between the onset of abuse (i.e., beginning before 24 months, between 24-64 months, or after 64 months) with U/d abuse status were not significant (Fisher's Exact Test $\chi^2(2) = 1.67$, $p = .43$, two-sided). There were extremely small cell counts, however, with the earliest onset

group having expected cell counts less than 5. In order to increase cell sizes to an acceptable level, chi squares were rerun with the onset variable divided into two groups: early abuse (i.e., before 64 months) and later abuse (i.e., after 64 months). Results were again insignificant ($\chi^2(1) = 1.53$, $p = .22$).

Chronicity: For the majority of participants (n = 26), abuse was recorded as occurring during one period only (i.e., infancy, preschool, or middle school and/or adolescence). For 10 participants, abuse occurred during two of these periods. For 6 participants, the abuse occurred across all three periods. Chi squares examining chronicity of abuse (based on number of periods an individual was included in a physical and/or sexual abuse group) and U/d abuse status were not significant ($\chi^2(2) = .56$, $p = .76$). Again, results were based on very small cell sizes; with expected cell counts of less than 5 for the cells including individuals who were identified as having experienced abuse across all three periods. To account for a small sample size, the influence of chronicity was tested again with using a dichotomized variable coded as 0 = on one abuse list only and 1 = on more than one list. The findings were still not significant ($\chi^2(1) = .41$, $p = .53$).

Other maltreatment: The majority (n=30) of participants was identified as having experienced at least one type of maltreatment other than physical or sexual abuse. During childhood, 26 participants were identified as having witnessed inter-parental violence, 15 as having been physically neglected, 5 as being verbally abused, and 8 as having experienced psychological unavailability. A chi-square analysis completed to determine whether experiencing other type(s) of maltreatment or witnessing domestic violence

increased the likelihood of being classified later as having a U/d abuse state of mind yielded no significant findings ($\chi^2(1) = .47$, $p = .49$).

Gender differences: Based on prospective abuse data, there were no significant gender differences with respect to whether or not participants ever experienced abuse (physical, sexual, or other), the number of times participants were included on physical or sexual abuse lists, or the age of abuse onset. There were significant gender differences, however, with respect to the type of abuse experienced. Chi square analyses of prospective abuse data indicated that males were more likely than females to experience childhood physical abuse (n=15 and 10, respectively) ($\chi^2(1) = 5.43$, p=.02), and females were more likely than males to experience sexual abuse (n=16 and 8, respectively) ($\chi^2(1) = 3.20$, p=.07) when abuse data were obtained prospectively.

Dissociation and U/d abuse status

To determine whether dissociation and the severity of trauma interacted to predict variation in U/d outcomes, logistic regression analyses were completed whereby each individual variable was entered separately in step one to gather information regarding main effects, and a two-way interaction term was entered at step two to determine whether the combination of experiencing more dissociative symptoms and more chronic/severe trauma was more predictive than demonstrating higher dissociative symptoms alone. The impact of the severity of trauma experiences on U/d abuse state of mind was examined by summing the types of abuse a participant experienced (i.e., physical, sexual, verbal, psychological unavailability, physical neglect, witnessing domestic violence) (range = 1-6) and the number of times a participant was included in

an abuse group (range 1-3). Results were not significant, $\chi^2(1, N = 42) = 1.77$, $p = .62$, revealing no significant main or interaction effects.

There were no significant differences on average dissociation scores for males (M = .40, SD = .57) and females (M = .10, SD = .50) over time. There was a trend toward significance [t(40) = 1.86, $p = .07$ (two-tailed)], however, with males having higher mean scores than females. The magnitude in the differences in means (mean difference = .29, 95% CI: -.03 to .61) was a moderate effect (eta squared = .08).

Important relationships and U/d abuse status

To answer the question of whether general supports for resilience (e.g., positive foundations and intervening supports between maltreatment and outcomes) apply to resolving earlier abuse experiences, logistic regression analyses were used. Because of a small sample size, two separate logistic regression analyses were conducted. The first included family variables, such as the early maternal sensitivity/supportive care composite and the 13-year family balance composite. The second regression analysis included variables examining the influence of other later relationships, including the composite variable for friendship security in adolescence and the composite variables for quality of romantic relationships at ages 19 and 23 years. Neither the family composite variables nor the later relationship variables were significantly predictive of U/d abuse status, $\chi^2(2, N = 39) = .72$, $p = .69$ and $\chi^2(3, N = 39) = 4.08$, $p = .25$.

There were no significant gender differences with respect to composite scores for maternal supportive presence during early childhood [t(40) = -.89, $p = .38$], family functioning in early adolescence [t(37) = .69, $p = .50$], friendship security in adolescence

[t(36) = -1.67, p = .10], or quality and security of romantic relationships in adolescence [t(17) = -.38, p = .71] or adulthood [t(18) = .07, p = .94] that required covarying out gender in these analyses.

Cumulative risk and U/d abuse status

A logistic regression analyses was performed with the cumulative risk variable to assess the impact of a combination of factors on the likelihood that participants would be classified confidently as U/d abuse (i.e., scores of 6 or above). Results indicated that the model was significant, $\chi^2(1, N = 42) = 4.23$, p = .04 and that the combined influence of several risk factors related to severity of maltreatment, dissociation, and poor relationships over time was significantly predictive of U/d abuse status. For this analysis, a conservative estimate of U/d abuse state of mind was used because the measure of overall risk was also stringent in that variables were counted as a risk factor only if they were far (i.e., one standard deviation) from the mean. When a less conservative definition of U/d abuse was used (i.e., scores at or above 5), the cumulative risk variable was no longer a significant predictor of U/d abuse status $\chi 2(1, N = 42) = 2.54$, p = .16.

Chapter 6: Discussion

This is the first study to use longitudinal data and prospective reports of abuse in a sample of physically and/or sexually maltreated individuals to investigate the factors that influence U/d abuse status in late adolescence and adulthood. There are important social and clinical applications of conducting this research. Both maltreatment and U/d attachment representations have long-term negative effects that continue into adulthood and into the next generation (e.g., Bowlby, 1982; Egeland et al., 1988; Hesse, 1996; Sroufe & Fleeson, 1986). Research on the effects of maltreatment and its potential impacts to attachment representations can provide useful information for helping victims of childhood maltreatment to organize or reorganize their attachment representation so that it has less of a negative impact on their or their children's functioning. By understanding what enables certain individuals to "overcome" their abusive experiences, we can determine how best to intervene in child maltreatment cases and for abuse survivors to achieve the greatest outcomes.

Just over half of all maltreated participants in this sample were classified as U/d abuse at age 19 and/or 26 years. Approximately 36 percent of participants received U/d abuse classifications at age 19 and 41 percent at age 26, with little stability between the two assessments. Although these fairly high percentages are disheartening, they also indicate that many survivors of childhood abuse are able to resolve those traumatic experiences. For participants for whom U/d abuse state of mind could be scored, approximately the same percentage was classified as U/d abuse at age 19 as at age 26. A slightly greater number of participants switched from being not U/d abuse at age 19 to

U/d abuse at age 26 than switched from U/d abuse at age 19 to not U/d at age 26. These findings may be due to differences in interviewing between the two assessments. Because the project was more developed, it is possible that the interviewers for the 26-year assessment were trained more extensively than the interviewers for the initial AAI administration, and they obtained more codeable information about participants' traumatic experiences and current state of mind. This could explain why at age 19 years, participants were less likely to admit to experiences of childhood abuse and fewer participants provided enough information that would allow for U/d abuse state of mind scoring. Insecure/dismissing classifications were not significantly related to denial of abuse history, to fewer U/d abuse classifications, or to more transcripts unable to be scored for U/d abuse. Unfortunately, the small sample size in this study prevented additional analyses that might have helped to elucidate reasons for changes in U/d abuse status from 19 to 26 years.

In addition to determining rates of U/d abuse and its degree of stability and change across adolescence and adulthood, this study attempted to identify the risk factors that may negatively impact that process as well as to identify the protective factors that allow for earned organization. Few significant findings emerged when examining specific risk or protective factors. This is likely in large part because of the study's small sample size, which necessarily limited the types of analyses that could be run with the data, and limited power in analyses precluded more robust findings. Despite the small sample size, two important significant findings emerged. First, the cumulative effects of several potential risk factors related to the severity of maltreatment, dissociation, and poor

relationships with others over time predicted U/d state of mind following childhood abuse by a caregiver. The powerful influence of cumulative history on later outcomes is a finding repeatedly confirmed in studies originating from this longitudinal project (see Sroufe et al., 2005 for a review).

A second important finding was that compared to participants with organized infant attachment histories, participants with D/d attachment histories were more likely later to be U/d with respect to earlier abuse. This highly significant finding ($p = .009$) at age 19 years is remarkable, not only because of the long period of time between assessments, but also because of several measurement issues. First, as mentioned previously, being maltreated is not necessary to be classified as D/d in the infant Strange Situation. In contrast, a U/d abuse score is not assigned unless the individual reports during the AAI that he or she experienced childhood physical and/or sexual abuse. If an individual is classified as D/d in infancy and does not report experiencing later maltreatment, then he or she will not be classified as U/d with respect to abuse. Second, the scoring of disorganized attachment representations during infancy is based entirely on the infant's behavioral responses, but scoring of disorganized attachment representations in adolescence and adulthood relies on the individual's linguistic processing. Third, in both infancy and in adulthood the scoring of disorganized attachment representations relies on the identification and scoring of fleeting, unstable, and somewhat difficult-to-identify manifestations of disorganization. Finally, in this study, the Strange Situations were administered only to mothers and their infants. D/d behaviors are relationship-specific (e.g., van IJzendoorn et al., 1999), and for many of these participants the

perpetrator of abuse that resulted in later U/d abuse classifications for the participant may have been a caregiver other than the mother.

In contrast to the findings at age 19 years, U/d abuse status at age 26 years was not significantly related to D/d classifications in infancy. Although the same patterns were found in adulthood as in adolescence, with more participants with histories of D/d attachment being U/d with respect to abuse, the difference was no longer significantly different than what would be expected by chance. The reason for this variation in results between 19 and 26 years is somewhat perplexing. One reason for this finding may be due to differences in the quality of interviewing across assessments.

Although a significant link between infant and disorganized attachment representations at age 26 years from the larger study sample was reported previously (Sroufe et al., 2005), there are sample and measurement differences between that study and this study that might explain the disparate findings. Whereas the present study included only those participants with maltreatment histories and was interested only in U/d state of mind related to childhood abuse, Sroufe et al.'s study was comprised of the full sample that included both individuals with and without maltreatment histories and their measure of U/d state of mind included both loss and abuse.

This study was not intended to answer all questions regarding the etiology of U/d states of mind following trauma. It does, however, serve as a beginning examination of the factors that might predispose persons to U/d states of mind or allow persons to resolve earlier maltreatment experiences. With that said, there were several limitations and challenges associated with this study. The most obvious limitation is the small

sample size, which necessarily limited the types of analyses that could be run with the data, and limited power in analyses precluded more robust findings. Although there were few missing data, at times missing data was necessarily excluded from analyses using listwise deletion, which resulted in a slightly smaller *n*. At other times, it was necessary to rely on different assessments at different times to obtain the necessary information (i.e., D/d scores). Finally, measurement issues must be addressed. The possibility that variation in AAI interviewing may have affected the data has already been discussed. Because not all abuse data were obtained across the same ages, it is difficult if assess the impact of maltreatment chronicity and age of onset on U/d abuse status. Although observational measures were available for assessing the quality and security of romantic relationships, a fewer number of participants were administered these assessments, and given an already small sample size, the author chose to rely on self-report measures. Consequently, however, the measure is not necessarily assessing the actual quality or security of the relationship, but the participant's perception of or intended presentation of those relationships.

There are several related areas of research that were beyond the scope of this study that also are worthy of empirical investigation. First, this study focused deliberately only on U/d abuse states of mind. Whether or not any of the same factors examined in this study impact U/d loss states of mind remains a question worth further investigation. We know very little about how U/d loss and U/d abuse states of mind are interrelated and whether the same processes influence their development and maintenance over time. Questions exist also about the normative or non-normative nature of these disorganized

mental processes. The Main and Goldwyn scoring system indicates that losses scored during the last year are analyzed separately from other losses. This is based on the assumption that disorganization may be a normal response to recent losses. It is unclear whether a similar transition period would be expected with respect to maltreatment. Are disorganized attachment representations following abuse normal and expected within a given time period following the trauma? If so, how long after the maltreatment occurs is disorganization no longer normative and the switch to organized attachment representations expected? Another unanswered question is whether being unresolved with respect to one type of trauma leaves one more vulnerable to being unresolved with respect to other types of trauma? Also, does the combination of being both U/d with respect to abuse and to loss leave one more at risk for negative outcomes? There are initial studies suggesting that this may be the case. For example, Riggs et al. (2007) found that demonstrating indices of both U/d loss and U/d abuse states of mind leads to higher scores for schizotypal and borderline personality disorders. Studies to date, however, have relied solely on retrospective self-report data of abuse.

In this study the impact of dissociative symptoms and severity of trauma on U/d abuse states of mind was investigated. A related topic worth exploring is the relationship between childhood trauma, PTSD, and U/d abuse. There is a recent growing interest and scientific literature in the link between posttraumatic stress disorder (PTSD) and U/d states of mind following trauma. Dissociative experiences are common among trauma survivors and among individuals suffering from PTSD. As Stovall-McClough and colleagues (2008) noted, “many of the characteristics of unresolved speech (e.g.,

psychological confusion, disorientation with respect to time-place, absorption, silences, sudden changes-invasions of trauma-related topics, and unsuccessful denial) are also phenomena consistent with reexperiencing and attempts to avoid reexperiencing as seen in PTSD" (p. 330). Although several researchers have found a significant link between PTSD and U/d abuse (e.g., Riggs et al., 2007; Stovall-McClough & Cloitre, 2006; Stovall-McClough et al., 2008), this has not been a consistent finding across studies (e.g., Sagi-Schwartz, Koren-Karie, & Joels, 2003; Turton, Hughes, Fonagy, & Fainman, 2004), and the research to date has relied on self-report measures of trauma. Longitudinal studies with prospective abuse data would be beneficial to further investigating these relationships.

Finally, as stated previously, there is much evidence that U/d states of mind are related to many negative outcomes that may continue across generations, yet studies suggest that individuals with U/d states of mind are not likely to benefit as much from current psychotherapeutic approaches (e.g., Levy et al., 2006; Moran et al., 2005). Research needs to be allocated to identifying most appropriate treatment approaches for individuals who are unresolved/disorganized with respect to earlier trauma.

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Appendices

Tables

Table 1
Descriptive Data of Study Variables

Variable	*Range*	*Mean*	*SD*	Frequency *0*	Frequency *1*	*n*
Maltreatment type						
Physical abuse only				24	18	42
Sexual abuse only				25	17	42
Physical and sexual abuse				35	7	42
Onset of physical and/or sexual maltreatment						
Infancy onset (birth-24 months)				33	9	42
Preschool onset (24-64 months)				31	11	42
Later onset (64 months-17.5 years)				20	22	42
Chronicity of physical and/or sexual maltreatment						
One period				16	26	42
Two periods				32	10	42
Three periods				36	6	42
Other maltreatment types						
Physical neglect				27	15	42
Psychological unavailability				33	08	41
Verbal abuse				37	05	42
Witnessing domestic violence				16	26	42
Infant attachment quality (Secure vs. Insecure)				22	19	41
Infant D/d status (Organized vs. Disorganized)				23	18	41
12 month	1-7	3.54	1.90	18	10	28
18 month	1-8	4.38	2.46	7	11	18
24 month	1-7	3.14	1.95	6	1	7
Dissociation (Z scores)	-2.00-2.13	0	1.00			42
Early maternal support/sensitivity (Z scores)	-2.49-1.96	0	1.00			42
6 month	1-8	5.30	1.55			42
24 month	1-7	4.11	1.43			37
42 month	1-7	4.23	1.74			42
13-year family functioning	8-18	13.19	2.70			39
Friendship security	2-7	4.42	1.16			38
16 years	1-7	3.88	1.56			38
19 years	1-7	4.92	1.50			38
19-year rom. rel. quality/security	1-7	3.95	1.88			19
23-year rom. rel. quality/security	1-5	2.73	1.25			20
Cumulative risk	0-5	2.79	1.46			42
U/d abuse state of mind (Resolved vs. U/d)				21	21	42
19 years	1-8	4.04	2.05	15	12	27
26 years	1-8	3.97	2.20	20	15	35

Table 2.

Zero-order Correlations for Indicator Variables

Indicator variable	1	2	3	4	5	6	7
1. Maltreatment severity	--						
2. Dissociation	.397*	--					
3. Early maternal support/sensitivity	-.474**	.019	--				
4. 13-year family functioning	-.063	.030	.219	--			
5. 16- and 19-year friendship security	-.200	-.248	.079	-.167	--		
6. 19-year romantic relationship quality	-.245	.238	.086	-.043	.649**	--	
7. 23-year romantic relationship quality	-.236	-.037	.028	-.020	-.091	.780**	--

** Correlation is significant at the 0.01 level (2-tailed).

Table 3

Frequencies of Highest U/d Scores at Ages 19 and 26 Years

	Age 19	Age 26
Reported applicable trauma experience during AAI	33	37
1 = No evidence of disorganization	3	7
2	4	4
3 = Slight indices	5	3
4	3	6
5 = Possible disorganization	7	6
6	1	4
7 = Disorganization	2	3
8	2	2
9 = Extreme disorganization	0	0
Total	27	35
Cannot Rate or Not Applicable	14	5

Table 4

Contingency Table: Continuity of U/d Abuse State of Mind Classifications from 19 to 26 Years

	Age 26 U/d Abuse Status		
	Resolved	Unresolved	
	observed frequency		
Age 19 U/d Abuse Status	(expected frequency, total %)		Total
Resolved	7	5	12
	(5.4, 35%)	(6.6, 25%)	
Unresolved	2	6	8
	(3.6, 10%)	(4.4, 30%)	
Total	9	11	20

Note. Fisher's Exact Test $\chi^2(1) = 2.16$, $p = .20$, two-sided

Table 5

Disorganized/disoriented Representation Scores Across Infancy

	12 mo.	18 mo.	24 mo.
1 = No signs of disorganization/disorientation	5	3	1
2	3	0	2
3 = Slight signs of disorganization/disorientation	9	4	2
4	1	0	1
5 = Moderate indices of disorganization/disorientation	6	3	0
6	1	1	0
7 = Definite but not extreme signs of disorganiz/disorient.	3	5	1
8	0	2	0
9 = Definite and extreme signs of disorganiz/disorient.	0	0	0
Total	28	18	7
Missing	14	24	1

Note. 24 month data are included only for participants for whom neither 12 nor 18 month D/d data were available.

Table 6

Contingency Table: Infant Organized/Disorganized Attachment Status by U/d Abuse Status

	Infant D/d Status		
	Organized	Disorganized	
	observed frequency		
Combined (19/26) U/d Status	(expected frequency, observed total %)		Total
Resolved	14	6	20
	(11.2, 34.1%)	(8.8, 14.6%)	
Unresolved	9	12	21
	(11.8, 22.0%)	(9.2, 29.3%)	
Total	23	18	41

Note. $\chi^2(1) = 3.06$, $p = .08$, one-sided.

19-year U/d Status			
Resolved	11	3	14
	(7.5, 42.3%)	(6.5, 11.5%)	
Unresolved	3	9	12
	(6.5, 11.5%)	(5.5, 34.6%)	
Total	14	12	26

Note. $\chi^2(1) = 7.46$, $p = .009$, one-sided.

26-year U/d Status			
Resolved	12	7	19
	(10.6, 35.3%)	(8.4, 20.6%)	
Unresolved	7	8	15
	(8.4, 20.6%)	(6.6, 23.5%)	
Total	19	15	34

Note. $\chi^2(1) = .93$, $p = .27$, one-sided.

Table 7

Contingency Table: Infant Secure/Insecure Attachment Status by U/d Abuse Status

	Adult U/d Abuse Status		
	Resolved	Unresolved	
	observed frequency		
Infant Quality of Attachment	(expected frequency, observed total %)		Total
Secure	9	13	22
	(10.7, 22.0%)	(11.3, 31.7%)	
Insecure	11	8	19
	(9.3, 26.8%)	(9.7, 19.5%)	
Total	20	21	41

Note. $\chi^2(1) = 1.18$, $p = .28$, two-sided.

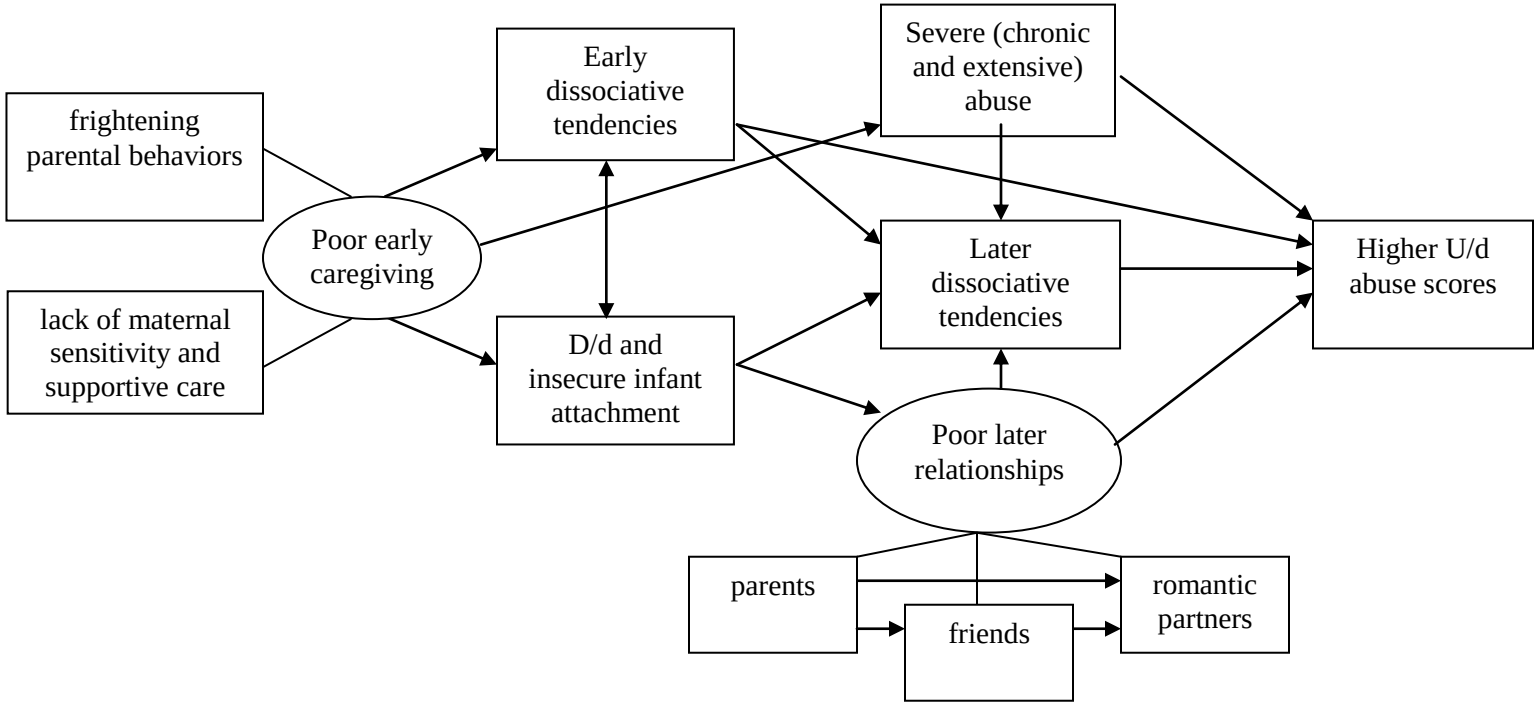
Table 8

Infant Combined Attachment Status by U/d Abuse Status

	Adult U/d Abuse Status		
	Resolved	Unresolved	
Infant Quality of Attachment	observed frequency		Total
Organized			
Secure	6	7	13
Insecure	7	2	9
Disorganized			
Secure	2	6	8
Insecure	4	6	10

Note. $\chi^2(1) = .28$, $p = .49$, two-sided, Fisher's Exact Test.

Figure 1
Hypothesized Conceptual Model



Frightening parental behaviors, especially when combined with lack of sensitivity and supportive care increases the risk of D/d attachment and early dissociation. If more severe, continued trauma occurs, the risk of dissociative tendencies will increase as well as the risk of experiencing poor relationships with others. D/d attachment early on, combined with more severe abuse, higher dissociative symptoms over time, and poorer relationships will predict higher risk of U/d.

Footnotes

[1] Although U/d state of mind related to abuse is typically referred to as "U/d trauma," in this paper the term "U/d abuse" is used instead to better distinguish between the effects of abuse versus other types of trauma on U/d states of mind. In addition, "overall U/d" will be used to refer to U/d states of mind that are due to any type of trauma (e.g., loss or abuse).

[2] Using the Strange Situation procedures, infants also may be classified as "Cannot Classify" (CC) if no single classification can be identified. The CC category is beyond the scope of this paper. For a review, see Hesse and Main, 2000.