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Predictors of disorganized states of mind with regard to trauma in mothers with maltreatment histories

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PREDICTORS OF DISORGANIZED STATES OF MIND WITH REGARD TO TRAUMA IN MOTHERS WITH MALTREATMENT HISTORIES

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DEDICATION

I would like to dedicate this work to those who have struggled to make meaning of their own child maltreatment. I would also like to dedicate this to my loving and supportive community, and finally, to my dear and loving husband.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1 INTRODUCTION

Disorganized states of mind with respect to trauma are understood as a lack of cognitive and emotional integration of traumatic experiences (Main & Morgan, 1996). Disorganized states of mind represent an important psychological construct for understanding parenting behavior as well as the intergenerational transmission of disorganized attachment (Ballen, Bernier, Moss, Tarabulsy, & St-Laurent, 2010; Lyons-Ruth & Jacobvitz, 2008; Kaufman & Zigler, 1987; Noll, Trickett, Harris, & Punam, 2009). Literature suggests that postpartum is a vulnerable period for experiencing disorganization and symptoms of depression and Posttraumatic Stress Disorder (PTSD), especially for mothers with histories of childhood maltreatment (Kanotra, et al., 2007; Marysko, et al., 2010; O'Hara, Neunaber, & Zekoski, 1984).

Very few studies have investigated mechanisms that contribute to the continuation of disorganized states of mind about trauma over time. Characteristics of child maltreatment and demographic risk factors have been linked to both disorganization and psychological symptoms of PTSD and depression (Bailey, Moran, & Pederson, 2007; Banyard, Williams, & Siegel, 2001; Beck, 2001; Davis, Ressler, Schwartz, Stephens, & Bradley, 2008; Riggs & Jacobvitz, 2002; Simon, Kobielski, & Feiring, 2008). The persistence of symptoms of PTSD has been theorized as one mechanism through which disorganized states of mind are developed and maintained (Fearon & Mansell, 2001; Liotti, 1992). Experiencing depression in the wake of maltreatment has also been linked to disorganization, however this relationship is less well understood (Borelli, Goshin, Joestl, Clark, & Byrne, 2010; Ivarsson, Granqvist, Gillberg, & Broberg, 2010). The current study investigated associations of socio-demographic and maltreatment characteristics (multiple maltreatment; maltreatment by a caregiver; developmental period; and maltreatment type) with disorganization and psychological symptoms of PTSD and depression.

The current study also investigated direct and indirect associations between psychological symptoms (PTSD and depression), and disorganized states of mind.

Disorganization: Importance and description

Disorganized representations of traumatic experiences are considered an important mechanism through which the effects of trauma are experienced. These disorganized representations or "states of mind" (Main & Morgan, 1996) are understood as a lack of cognitive and emotional integration of traumatic experiences. Main and Morgan (1996) further define disorganization as (1) efforts to dissociate memories from awareness, (2) current interference from partially dissociated memories, and (3) interference from co-existing but incompatible and dissociated memories. Maltreated youth frequently develop disorganized representations of their maltreatment experiences (Bailey et al., 2007; Riggs & Jacobvitz, 2002; Stalker & Davies, 1995; Stovall-McClough & Cloitre, 2006). Evidence of such can be manifest in narrative discourse about traumatic events. Disorganized states of mind were originally identified using a narrative method called the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996). This interview asks participants to recall and discuss their attachment relationships, including experiences of child maltreatment. Discourse related to maltreatment experiences is then examined for indicators of disorganization. Indicators of disorganization include lapses in monitoring of reasoning, lapses in monitoring of discourse, and lapses in monitoring of behavior (Main, Goldwyn, & Hesse, 2002).

Lapses in monitoring of reasoning represent confusion in cognitive understandings of the traumatic event, or a temporary loss of logical reasoning toward the event (Main et al., 2002). For example, an individual may unsuccessfully deny the occurrence, nature, or intensity of their maltreatment experiences (e.g., "I don't, I don't think I don't exactly remember anything like that happening. We'll, I mean, sometimes I guess I got some scary bruises. I don't think it was

ever like really hard or anything like that."). Lapses in monitoring of discourse reflect cognitive and emotional confusion that are expressed in the quality of speech, such as irregularities or shifts in the narrative style of the speaker's discourse (Main et al., 2002). For example, speech may become inappropriate and incoherent and the speaker may slip into the present tense, as if the abuse experience is happening in the current moment (e.g., "And then he became after me, and I'm running up the stairs, count 'em—one, two, three, four, bang! Duck around the door just it hit the wall near my head."). Disorganized states of mind can also be manifest through extreme behavioral reactions that are characterized by descriptions of past behavior that suggest an underlying lack of integration of behavior (Main et al., 2002). For example, a mother with a history of childhood sexual abuse may describe that she refuses to allow her daughter to sit on any man's lap, including that of her own father. This would be considered disorganized behavior related to the trauma that belies psychological confusion that all men are child predators.

Child maltreatment is considered one of the primary developmental traumas contributing to disorganized states of mind (Bailey, et al., 2007; Riggs & Jacobvitz, 2002; Stalker & Davies, 1995; Stovall-McClough & Cloitre, 2006). Disorganized states of mind have been linked to various behavioral problems including suicide, criminal behavior, anxiety, and borderline personality disorder in individuals who have experienced childhood maltreatment (Adam, Sheldon-Keller, West, 1995; Alexander, 1992; Allen, Hauser, & Borman-Spurrel, 1996; Fonagy, et al., 1996).

Disorganized states of mind are also salient to parenting and child outcomes. Research suggests that disorganized representations of mothers' childhood traumas are linked to more fearful and disoriented parenting (Ballen et al., 2010). Specifically, disorganized mothers exhibit more intrusive and frightening behaviors with their children (Jacobvitz, Leon, & Haven, 2006). This intrusive and frightening parenting style is, in turn, predictive of disorganized attachment in

infants (Lyons-Ruth & Block 1996; Moehler, Biringen, & Poustka, 2007). Thus, parents' disorganization is considered to be a mechanism or risk factor for the development of disorganized attachment in children. Disorganized attachment in children is, in turn, a risk factor for a number of maladaptive outcomes including poor emotion regulation as well as internalizing and externalizing behavior problems (Lyons-Ruth & Jacobvitz, 2008). Furthermore, maternal maltreatment history is a risk factor for child maltreatment and PTSD (Kaufman & Zigler, 1987; Noll, Trickett, Harris, & Punam, 2009). The research reviewed suggests that it is essential to develop a better understanding of maternal disorganization, including the identification of factors that might discern which mothers may be most vulnerable to developing disorganized states of mind about their childhood maltreatment experiences.

In short, disorganized states of mind help us to understand the consequences of child maltreatment as well as the intergenerational transmission of disorganized attachment. To date, the majority of research has focused on the development of disorganized attachment strategies among children. Maternal disorganized states of mind have been examined as a mechanism and risk factor for maternal and child psychopathology and child attachment, but are less often themselves the target of investigation. The current study focuses on pathways to maternal disorganized states of mind during a particularly vulnerable time - the postpartum period.

Motherhood as a vulnerable period for disorganization and psychopathology

The postpartum period may be a useful period for understanding which mothers exhibit disorganized states of mind. To date, no empirical studies have examined mothers' disorganized states of mind with regard to their childhood trauma during this time. However, pregnancy, childbirth, and the postpartum period are a particularly vulnerable period for women with maltreatment histories (Marysko, et al., 2010). The postpartum period can be a challenging period for all new mothers (Kanotra et al., 2007), and those with maltreatment histories may be

especially vulnerable to the onset or exacerbation of PTSD and depression (Marysko, et al., 2010).

The postpartum period is a time during which women are at higher risk for developing symptoms of depression (O'Hara et al., 1984; Robertson, Grace, Wallington, & Stewart, 2004). Approximately 12% of women develop postpartum depression (O'Hara et al., 1984; Robertson et al., 2004), and the strongest risk factors are depression and anxiety during pregnancy; stressful life events (during and after pregnancy); low levels of social support; and a lifetime history of depression (Davey, Tough, Adair, & Benzies, 2011; O'Hara, et al., 1984; Lancaster et al., 2010; Robertson, et al., 2004). Other risk factors for postpartum depressive symptoms include low self-esteem, stressors specific to labor and delivery, unplanned pregnancy, childcare stress, infant temperament, and stress in relationships such as domestic violence and martial difficulties (Beck, 2001; Davey, et al., 2011; O'Hara, et al., 1984; Lancaster et al., 2010). Demographic variables such as marital and lower socioeconomic status have been linked to the development of postpartum depression (Beck, 2001; O'Hara, et al., 1984). Research on the course of postpartum depression has revealed that most mothers experience symptom relief by 6 months after childbirth (O'Hara, et al., 1984).

Researchers have also examined rates of PTSD in the transition to motherhood. A number of studies, including large nationally representative studies, estimate that 4-7.9% of women meet diagnostic criteria for PTSD after childbirth. A larger percentage, 25-30% report experiencing at least one symptom of PTSD following childbirth (Seng et al., 2010; Zaers, Waschke, & Ehlert, 2008). Researchers have investigated factors that put women at risk for developing posttraumatic symptoms in the perinatal period. A number of studies have investigated the degree to which pregnancy and birth are themselves traumatic events (Ayers & Pickering, 2001; Cohen, Ansara, Schei, Stuckless, & Stewart, 2004; Lev-Wiesel, Chen, Daphna-

Tekoah & Hod, 2009). Characteristics of the birth experience are less predictive of PTSD in the postpartum period than anxiety during pregnancy and a history of traumatic experiences (Cohen et al., 2004; Lev-Wiesel & Daphna-Tekoah, 2009; Seng et al., 2010; Slade, 2006; Zaers, et al., 2008).

Experiences of childhood sexual abuse appear to put women at an increased risk for the development symptoms of PTSD after childbirth (Lev-Wiesel & Daphna-Tekoah, 2009; Lev-Wiesel, Daphna-Tekoah, & Hallak, 2009; Soet, Brack, & Dilorio, 2003)**.** This literature suggests that postpartum is a vulnerable period for women, especially those with histories of maltreatment and other traumatic events. The stress of becoming a mother, rather than the stress of the birth experience, may trigger symptoms of PTSD for many mothers (Lev-Wiesel & Daphna-Tekoah, 2009; Lev-Wiesel, Chen, et al., 2009; Soet, et al., 2003). This research indicates that becoming a mother may trigger memories of the mothers' own caregiving relationships and maltreatment experiences. Triggering these memories may result in experiencing more symptoms of PTSD. The current study assesses symptoms of PTSD and depression during this vulnerable time (6-weeks and 4-months after birth). This allows us to better understand how psychological functioning during this vulnerable period relates to disorganization at the conclusion of this stage (6 months).

Predictors of disorganized states of mind: PTSD and Depression

Very few studies have investigated mechanisms that contribute to the development and maintenance of disorganized states of mind about trauma. Symptoms of PTSD and complex trauma symptoms have been found to be associated with disorganized states of mind (Bailey et al., 2007; Simon, McElroy, & Feiring, 2012; Stovall-McClough & Cloitre, 2006; West, Adam, Spreng, & Rose, 2001). Stovall-McClough and Cloitre (2006) found that women who were classified as disorganized, were 7.5 times more likely to be diagnosed with concurrent PTSD,

compared to women who were not disorganized. Other studies found links between symptoms of complex trauma including dissociation, but not traditional symptoms of PTSD, and disorganized states of mind regarding maltreatment (Bailey, et al., 2007; West et al., 2001). To date, only one study has investigated longitudinal relations between posttraumatic symptoms and disorganization. This study found that symptoms of PTSD in the immediate aftermath of childhood sexual abuse were predictive of more disorganized trauma representations six years after childhood sexual abuse (Simon et al., 2012). The current study investigated how the persistence of PTSD and depression during the transition to motherhood are related to later maternal disorganized states of mind. Next, I will examine different theories of how disorganization and posttraumatic symptoms are related.

Avoidance

Avoidance is a symptom of PTSD and is defined as cognitive, emotional, or behavioral evasion of trauma cues and trauma related material (American Psychiatric Association, 2000). For instance, the symptom of avoidance could include escaping thoughts and emotions related to their maltreatment, individuals who perpetrated maltreatment, and places where maltreatment occurred. Very few studies have examined relations between avoidance and disorganization. In a study of women with maltreatment histories, Stovall-McClough and Cloitre (2006) found that disorganized status was associated with more severe avoidance symptoms of PTSD but not with intrusion or hypervigilance. These findings lend support to the notion that avoidance of trauma cues may assist in the development and maintenance of disorganized states of mind after abuse. With the exception of Stovall-McClough and Cloitre's (2006) study, the work in this area remains largely theoretical and has little direct empirical support. A number of researchers have theorized about the link between disorganized states of mind and trauma-related cognitive, emotional, and behavioral avoidance (Fearon & Mansell, 2001; Liotti, 1992).

Liotti (1992) posits that children raised in maltreating families are exposed to fear-provoking situations and experience high levels of negative emotions including fear, hopelessness, and anger. In the absence of flexible and healthy coping strategies, children often use cognitive, emotional, and behavioral avoidance and other maladaptive coping strategies such as aggression and dissociation to manage negative affect (Briere, 2002; Cicchetti & Valentino, 2006). It has been theorized that in the short-term, avoidance can serve protective functions for maltreated youth by allowing them to separate themselves from extreme emotional states and terrifying situations (Fonagy, Target, & Gereley, 2000; Terr, 1991). However, in the long-term avoidance may put children at risk for developing PTSD and prevent the integration of memories and emotions related to trauma, which results in disorganized trauma representations (Fearon & Mansell, 2001; Liotti, 1992).

Processing of Traumatic Memories related to PTSD

Theoretical and empirical literature on PTSD focuses less on disorganized states of mind per se, but may be helpful in elucidating associations between PTSD and disorganized representations of trauma. There are notable parallels between the literatures on disorganized states of mind and cognitive processing connected to PTSD. This is particularly true of theory and research by Ehlers and Clark (2000), which examines detailed associations between the ways individual's encode, process, and react to traumatic events both in the immediate aftermath and over time. The posttraumatic cognitive processes described by Ehlers and Clark (2000) are markedly similar to the theory of lapses in monitoring of reasoning, discourse, and behavior illustrated in disorganized states of mind. I will outline the similarities between these lines of thinking in an effort to better understand relations between PTSD and disorganized states of mind related to trauma.

Ehlers and Clark (2000) propose that individuals with PTSD are unable to see their trauma as a time-limited event and assume that it must have negative implications for their future. These negative appraisals are overgeneralized and often create a sense of current threat. For example, a woman who was sexually abused by a babysitter as a child may make an overgeneralized appraisal that "no babysitter is safe." In support of this theory, Dunmore, Clark, & Ehlers (2001) found that negative overgeneralized appraisals of trauma were associated with the onset and severity of PTSD in a sample of individuals who experienced physical and sexual assault.

In comparing this aspect of posttraumatic cognitive processing with disorganized processing of trauma, we can observe similarities between overgeneralized negative appraisals and disorganized lapses in monitoring of reasoning. Lapses in monitoring of reasoning are defined as beliefs and cognitions about trauma that are overgeneralized and confused. The overgeneralized and negative appraisals described by Ehlers and Clark (2000) exemplify the type of psychologically confused statements that would be classified by Main, Goldwyn, & Hesse (2002) as an indicator of a disorganized trauma representation.

For those who develop PTSD, distressing trauma memories may be stored as a large associative network of stimulus response features (Ehlers & Clark, 2000). These stimuli are commonly sensory impressions (e.g. lighting, texture, smell, sounds) and not clear episodic memories. These stimulus features of the trauma (sights, smells, sounds, feelings) are tied closely to the response feature at key moments during the traumatic experiences (e.g., arousal, flooding, fleeing, freezing; Ehlers & Clark, 2000). Furthermore, individuals who experience trauma may be primed and have a reduced perceptual threshold, for these stimuli associated with the trauma. Research suggests that individuals may be very easily triggered by sensory experiences that are similar to those experienced during a trauma (Ehlers, Michael, Chen, Payne,

& Stan, 2006; Michael & Ehlers, 2007). Therefore, subsequent encounters with a trauma stimulus feature (e.g. a scent that is similar to the room they were abused in) or reminders thereof may evoke intense responses similar to those experienced at the time of the trauma (e.g., emotional flooding and freezing). However, most of the studies in this area have focused on most vehicle accidents as the trauma.

Again, there are notable parallels between the priming process described by Ehlers and Clark (2000) and theories of disorganized trauma representation. Disorganized lapses in monitoring of discourse can take the form of individuals speaking as if they are in a different time and place, intrusive speech that takes the form of visual-sensory images, the speaker being unable to finish sentences. Individuals may begin to slip into past tense or begin to describe the abuse event as if it is currently happening or begin to speak in incoherent visual-sensory images experienced during the trauma (Main et al., 2002). One might hypothesize that describing the trauma memories during the interview might prime individuals. Once primed individuals may express this process as disorganized discourse.

Finally, Ehlers and Clark (2000) describe how trauma memories may be poorly integrated into ones' autobiographical memory base. That is to say, trauma memories may be poorly elaborated vague and inadequately integrated into their context in time, place, and subsequent and previous autobiographical information. Hence, trauma memories can exist without a time and place, and may be easily recalled and experienced as if they are happening in the here and now. While sensory memories may be primed, episodic memories of the trauma may remain vague and biased towards negative appraisals. In fact, a study that investigated traumatic memories found that women with histories of maltreatment had more difficulty retrieving specific trauma memories when given specific cue words compared to women without maltreatment histories (Henderson, Hargreaves, Gregory, & Williams, 2002). Although not

specific to maltreatment, several studies have found that individuals with PTSD illustrate less specific autobiographical memory recall than individuals without PTSD (McNally, Lasko, Macklin, & Pitman, 1995; Schonfeld & Ehlers, 2006; Schonfeld, Ehlers, Bollinghaus, & Rief, 2007). One study found that rumination about the trauma mediated effects of low memory on posttraumatic adjustment (Kleim & Ehlers, 2008).

Once again, there is a parallel between the poorly elaborated memories Ehlers and Clark (2000) depict and lapses of monitoring of discourse described by Main et al. (2002) in the AAI manual. Lapses in monitoring of discourse take the form of the speech around the topic becoming markedly incoherent, odd associations, unfinished sentences, inability to name the abuse, and sudden and apparent confusion related to the trauma and moving away from the topic (Main et al., 2002). During the course of the trauma interview these poorly elaborated and vague trauma memories may be experienced as lapses in monitoring of discourse, such as incoherent discourse while describing the abuse, inability to name the abuse, and sudden apparent confusion about the trauma (TMMI; Simon, Kobielski, & Feiring, 2006).

In conclusion, there are notable connections between theoretical and empirical theories of PTSD and disorganized states of mind with regard to trauma. Individuals who are classified as disorganized are more likely to be diagnosed with PTSD and evidence more symptoms of complex trauma (Bailey et al., 2007; Stovall-McClough & Cloitre, 2006; West, et al., 2001) Liotti (1992) theorized that posttraumatic avoidance might serve a short-term protective function for youth exposed to child maltreatment. However, in the long-term avoidance may increase risk of developing PTSD and prevent the integration of memories and emotions related to child maltreatment resulting in disorganization (Fearon & Mansell, 2001; Liotti, 1992). There are also notable parallels between theoretical and empirical literature on cognitive processing related to PTSD and disorganized representations of trauma. Overgeneralized negative appraisals, priming

of trauma stimuli, and poor elaboration of trauma memories into their context in time and place are markedly similar to indicators of disorganized representations of trauma.

Despite the links between research and theories of PTSD and disorganization there are many limitations to this body of literature. First and foremost, very few studies have investigated cross-sectional or longitudinal relations between posttraumatic symptoms and disorganization. Apart from Stovall-McClough and Cloitre's (2006) and Simon et al.'s (2012) studies, theories of links between symptoms of PTSD and disorganization remain largely theoretical and have little direct empirical support. The PTSD research that has been conducted has focused on victims of motor vehicle accidents and not on individuals with histories of child maltreatment.

I propose that the persistence of PTSD and cognitive processes associated with PTSD may serve as one possible pathway to the development and maintenance of disorganized states of mind with regard to trauma. The current study investigates pathways to disorganized states of mind with regard to trauma during the vulnerable period postpartum. I expect that persistence of PTSD over the postpartum period will predict subsequent disorganized states of mind at a point of time during which most mothers experience symptom relief (Bailey et al., 2007; Ehlers & Clark, 2000; O'Hara, Neunaber, & Zekoski, 1984; Simon et al., 2012; Stovall-McClough & Cloitre, 2006; West et al., 2001).

Depression

Few studies have examined associations between depression and disorganized representations of trauma. However, a host of studies have identified depression as an important outcome associated with experiences of trauma, including child maltreatment (Cohen, Hien, & Batchelder, 2008; Davis, Petretic-Jackson, & Ting, 2001; Feiring, Miller-Johnson, & Cleland, 2007; Lyons-Ruth & Block, 1996; Moehler, Biringen, & Poustka, 2007; Polusny & Follette, 1995). Depression has also been found to be highly comorbid with PTSD in traumatized samples

(American Psychiatric Association, 2000; Brown, Campbell, Lehman, Grisham, & Mancill, 2001; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Mayou, Bryant, & Ehlers, 2001; O'Donnell, Creamer, Pattison, & Atkin, 2004). As such, it is unclear whether depression might be associated with disorganized trauma representations independent of its association with PTSD.

A few studies have reported associations between depression and disorganized trauma representations. Borelli, David, Crowley, and Mayes, (2010) found that disorganized attachment was associated with depressive symptoms among school-aged children. A longitudinal study of pregnant incarcerated women found that more severe trauma disorganization was associated with higher levels of depressive symptoms at release (Borelli et al., 2010). Another study sought to understand whether or not depression differentially related to type of trauma (Ivarsson et al., 2010). This cross sectional study of adolescents found that disorganization with respect to loss was associated with comorbid OCD and depressive disorders while disorganization with respect to abuse was associated with depressive disorders.

To date, very few empirical studies have examined how depression and disorganization are temporally related. While these relationships are not well understood, the literature concerning depression and PTSD can provide direction. This literature suggests that depression may result from PTSD symptoms and ruminating related to trauma memories (Ehring, Frank, & Ehlers, 2008; Nolen-Hoeksema & Morrow, 1991). In short, disorganized and incoherent memories of the trauma are experienced as highly distressing, and ruminating about this distressing trauma related material contributes to the onset and/or maintenance of PTSD and depression (Ehring et al., 2008; Ehring, Szeimies, & Schaffrick, 2009). In fact, rumination has been linked to the development and maintenance of depression and is associated with a host of cognitive and emotional problems in dysphoric individuals (Lyubomirsky & Tkach, 2004). In

support of this, research has found that depressive rumination assessed prior to trauma predicted both symptoms of PTSD and depression in the wake of the traumatic experience (Ehring et al., 2008; Nolen-Hoeksema & Morrow, 1991).

In the current study, I anticipated that while depression and PTSD are highly co-morbid, PTSD might be uniquely associated with the segregated mental states that are characterized by disorganization. Although a small group of studies have established links between depression and disorganization, these studies have failed to disentangle the unique contributions of depression and PTSD to disorganization. Given this, I expected separate pathways from depression and PTSD to disorganization. In review, I expected that persistence of both depression and PTSD over the postpartum period would predict subsequent disorganized states of mind at a point of time during which most mothers experience symptom relief (6 months after birth).

Assessing disorganized states of mind with respect to trauma

Disorganized mental states are most commonly assessed using narrative methods, such as the Adult Attachment Interview (AAI; George et al., 1996). This interview asks participants to recall and discuss their attachment relationships from childhood. Participants who have experienced traumatic events in childhood, such as maltreatment or death of a parental figure are asked to discuss these experiences in greater depth, and then this discourse is examined for indicators of disorganization.

These narratives are then transcribed and analyzed by trained coders who identify indicators of disorganization and assign scores (Main et al., 2002). Indicators of disorganization include lapses in monitoring of reasoning, discourse, and behavior. Individual narratives are assigned a disorganized classification, if indicators of disorganization exceed a threshold score

and meet qualitative criteria. Thus, narratives may evidence low levels of disorganization without being classified as disorganized.

More recently, Simon and colleagues (Simon et al., 2012) have argued that disorganized states of mind might be assessed using similar strategies in the context of a trauma-specific interview. Simon's interview, the Trauma Meaning Making Interview, utilizes Main et al. (2002) criteria for scoring disorganized representations as well as assessing individual differences in strategies for processing experiences of child maltreatment (Simon et al., 2006). Traditionally, disorganization with respect to trauma in adults was conceptualized as part of an individuals' state of mind about attachment; however, as reviewed above, disorganization appears to be related to cognitive processing of trauma (Ehlers & Clark, 2000; Liotti, 1992; Main et al., 2002).

The AAI protocol queries about experiences of child abuse; yet only abuse experiences that occur within the context of an attachment relationship are probed. Thus, childhood maltreatment experiences that are perpetrated by other important adults are excluded from query. Additionally, the AAI criterion for coding of child maltreatment experiences does not include experiences of childhood emotional abuse or neglect. These experiences are only included if they take the form extreme punishment (being locked in a closet) or extremely frightening rages aimed at the child or threats of physical harm or death. Thus, experiences of emotional abuse and neglect are not queried during the interview, despite the traumatic nature of this type of maltreatment. Research also suggests that in high-risk samples individuals who report sexual abuse during a semi-structured interview will fail to report it during the AAI (Kobak, Cassidy, & Zir, 2004). This data suggest that many individuals who may in fact be disorganized about their trauma may never disclose that trauma during the interview. Moreover, certain maltreatment experiences may never be queried for examination.

Trauma-related interviews, like those created by Simon, Kobielski, & Feiring (2006) provide a way to directly assess disorganization about trauma within attachment and non-attachment relationships. In fact, Simon et al. (2012) assessed disorganization within and outside of the attachment relationship, and have found individuals who experience maltreatment outside of an attachment relationship may exhibit characteristics of a disorganized state of mind regarding childhood trauma (Simon, et al., 2012). However, this is not to say that maltreatment within the attachment is not important to understanding disorganization with respect to trauma. To the contrary, previous research suggests that abuse within the context of a caregiving relationship would represent a greater vulnerability to disorganization and psychological symptoms (Kendall-Tackett, Williams, & Finkelhor, 1993; Riggs & Jacobvitz, 2002). To this point, Simon and colleagues found that abuse by attachment figures was predictive of more disorganized trauma representations six years after childhood sexual abuse (Simon et al., 2012).

Few studies have assessed and reported frequencies and variation in indicators of disorganization in research samples. The attachment literature has not investigated which indicators occur most frequently or are most predictive of outcomes. Instead, disorganized classification is largely used as a variable of interest. Without this information, researchers and clinicians are limited in their ability to understand the possible importance of specific types of disorganization. Developing a better understanding of which indicators of disorganization occur with greater frequency will guide researchers and clinicians on screening for these indicators in traumatized individuals. It will also allow researchers and clinicians to include indicators of disorganization in their assessments and treatments in the wake of trauma. The current study describes the frequency and variability of indicators of disorganization, as well as the frequency and variability of disorganized classification, in a sample of mothers with maltreatment histories.

Maltreatment characteristics, demographics, and disorganization

Thus far I have focused on relations between disorganized states of mind and have hypothesized that the persistence of symptoms of PTSD and depression may serve as a mechanism through disorganized states of mind are developed and maintained. Next, I will turn my attention to characteristics of the maltreatment experiences and possible demographic variables that may influence disorganization and symptoms of PTSD and depression.

Main and Hesse (1990) first identified unresolved/disorganized states of mind among adults with histories of attachment related maltreatment and loss. Because many studies in this area lump together individuals with loss and maltreatment histories, we know relatively little about how the two compare (Adam et al., 1995; Alexander, 1992; Allen et al., 1996). Only a limited number of studies have specifically examined disorganization that is specific to child maltreatment experiences. This small body of research has been conducted in both normative samples and clinical samples. Results revealed a link between experiencing childhood maltreatment and disorganized status (Bailey et al., 2007; Riggs & Jacobvitz, 2002; Stalker & Davies, 1995; Stovall-McClough & Cloitre, 2006). These studies suggest that maltreatment experiences are associated with higher rates of disorganized mental states.

Maltreatment Type

While experiences of maltreatment have been investigated, few studies have examined associations between types of maltreatment (physical, sexual, emotional, and neglect) and disorganized status. To date, studies have focused on physical and sexual abuse and disorganization, with no evidence that either is more strongly to disorganization (Bailey et al., 2007; Riggs & Jacobvitz, 2002; Stalker & Davies, 1995). No studies have examined links between emotional abuse or neglect and disorganized representations. However, emotional abuse has been identified as a type of maltreatment that underlies most other maltreatment experiences (Hart, Binggeli, & Brassard, 1998). Emotional abuse and neglect serve as risk factors for reduced

psychosocial functioning and symptoms of PTSD and depression (Davis et al., 2001; Moehler et al., 2007; Nikulina, Spatz Widom, & Czaja, 2011; Vega, Osa**,** Ezpeleta**,** Granero, Domenech, 2011; Widom, DuMont, & Czaja, 2007). Given this limitation in the literature, I assessed whether maltreatment type (physical, sexual, emotional, and neglect) is associated with levels of disorganization and psychological symptoms.

Multiple Maltreatment

To date, no published studies have assessed whether multiple experiences of maltreatment are related to disorganized status. However, numerous studies have found that greater numbers of interpersonal traumas, including multiple abuse experiences, are associated with more negative outcomes, including higher rates of PTSD and depression (Banyard et al., 2001; Cohen et al., 2008; Lipschitz, Kaplan, Sorkenn, & Chorney, 1996). This body of literature suggests that experiencing multiple traumas may render trauma processing more challenging for individuals and increase risk for developing disorganized states of mind as well as psychological symptoms.

Abuse by a caregiver

Few research studies have investigated the role of maltreatment by a caregiver and disorganization. Kobak, Cassidy, and Zir (2004) suggests that being maltreated by a caregiver may interrupt essential attachment and caregiving systems. Children who are maltreated by their parents are charged with the task of not only processing and integrating that they experienced maltreatment, but also processing that their perpetrator is supposed to love and care for them. This dynamic is theorized to create a greater challenge to recovery (Kobak, et al., 2004). A small body of literature has found abuse by a caregiver was positively associated with disorganized status (Riggs & Jacobvitz, 2002; Simon, Kobielski, & Feiring, 2008). Both theoretical and empirical literatures support the association between being maltreated by a caregiver and

disorganized states of mind and psychological symptoms. The current study expands upon these findings to examine associations for various types of maltreatment experiences and perpetrator identity. I expected that any type of maltreatment perpetrated by a caregiver would be associated with disorganization.

Demographic Risk

In addition to the abuse-specific characteristics outlined above, demographic risk variables have also been linked to the development of postpartum depression and PTSD. Lower socioeconomic status serves as a risk factor for the development of postpartum depression (Beck, 2001; O'Hara et al., 1984). A large national study of functioning in the postpartum period found that younger age and greater socioeconomic disadvantage were associated with higher rates of PTSD (Seng et al., 2010). Furthermore, the broader literature on PTSD suggests that minority race and lower socioeconomic status increase the chances that an individual will develop PTSD, due in part to greater exposure to traumatic material (Alim et al., 2006; Davis et al., 2008; Parto, Evans, & Zonderman, 2011; Schwartz, Bradley, Sexton, Sherry, & Ressler, 2005).

In contrast, few researchers have examined relations between disorganized states of mind and socio-demographic risk. In a study of attachment organization in at-risk mothers, Bailey et al. (2007) found that women who were classified as disorganized reported lower socioeconomic status and lower educational attainment. These findings suggest that direct and indirect relationships between socio-demographic risk, postpartum PTSD and depression, and disorganization warrant investigation. From this literature, I expected that socio-demographic risk factors such as economic disadvantage and race may serve as a vulnerability to the development of psychological symptoms (PTSD and depression) as well as disorganization in the transition to motherhood.

Current Study: Aims and Hypotheses

The current study examines how descriptors of mother's maltreatment experiences are associated with disorganized status. To date, a small body of literature in this area has focused on how types of maltreatment (sexual, physical, emotional, and neglect) are differentially associated with disorganized states of mind. Current research has largely ignored the role of other characteristics of maltreatment. The current study investigated associations between socio-demographic and maltreatment characteristics (multiple maltreatment; maltreatment by a caregiver; developmental period; and maltreatment type) and disorganization. This study examined the relationship between maltreatment, socio-demographic characteristics, and psychological symptoms of PTSD and depression. The current study also investigated direct and indirect associations between psychological symptoms (PTSD and depression) and disorganized states of mind.

The first aim of the current project was to determine the frequency and variability of both classification and indicators of disorganized states of mind with regard to child maltreatment. I expected that indicators of disorganization would demonstrate good variability. Previous research suggests that about half of individuals who endorse a trauma history will be classified as disorganized (Bailey et al., 2007; Riggs & Jacobvitz, 2002; Stovall-McClough & Cloitre, 2006; West et al., 2001). Therefore, I expected that disorganized classification would occur at similar rates in this sample.

The second aim of the current project was to investigate how characteristics of maltreatment experiences (multiple maltreatment, type of maltreatment, perpetrator identity, and developmental period) relate to disorganized states of mind with regard to child maltreatment in the postpartum period. This project examines associations between maltreatment characteristics and disorganized mental states six months postpartum. Based on past research, I expected that individuals who experience multiple types of maltreatment would report higher levels of

disorganization. Finally, individuals who were abused by caregiver figures would have higher rates of disorganized states of mind. Additionally, severity (frequency and duration) of maltreatment will be positively associated with disorganized status.

The final aim of the current project was to investigate how maternal maltreatment experiences and posttraumatic stress symptoms and depression are associated with subsequent disorganized status. I expected that persistence of both depression and PTSD over the postpartum period would predict subsequent disorganized states of mind at a point of time during which most mothers experience symptom relief (6 months postpartum; O'Hara et al., 1984).

In the current study, I used a within-group design to examine pathways to disorganization in a sample of mothers with histories of childhood maltreatment. Using structural equation modeling, I tested the conceptual model shown in Figure 1. I hypothesized that (a) maltreatment characteristics (e.g., multiple maltreatment, abuse by a parent figure) and socio-demographic risk would be related to higher levels of PTSD and depression at 6-weeks postpartum, (b) higher levels of PTSD and depression at 6-weeks postpartum would be related to higher levels of these symptoms at 4-months postpartum, (c) higher levels of PTSD and depression at 4-months postpartum would be related to higher levels of disorganization at 6 months postpartum, and (d) the effects of symptoms of PTSD and depression at 6-weeks on subsequent disorganization would be indirect, working through symptoms of PTSD and depression at 4-months. In addition to the predictive relations hypothesized, I expected correlational relations between symptoms (PTSD and depression) measured concurrently. I expected that symptoms of PTSD and depression measured at 6-weeks would be correlated, as would symptoms of PTSD and depression measured at 4-months.

CHAPTER 2 METHODS

Participants

The current study was administered as a part of a larger study entitled Maternal Anxiety during the Childbearing Years (MACY). MACY seeks to investigate the relationship between symptoms of PTSD and psychological and biological outcomes during the transition to motherhood. Participants for the larger MACY were recruited in two ways. The original group of MACY participants was recruited from a longitudinal study that examined mother's stress, trauma, and anxiety in the transition to motherhood (Seng, PI). This group was recruited from hospitals throughout Southeastern Michigan. Additional MACY participants were recruited from the greater Ann Arbor community using Internet postings and flyers advertising a study of maternal anxiety during pregnancy and the postpartum period. Exclusion criteria for both samples included mothers who were under the age of 18, who had overt psychosis or current substance dependence, or whose infants had medical illness or significant developmental delays.

The final sample for the MACY project included 268 mothers with 4-month old infants. The sample for the current study includes the 118 women who endorsed histories of child maltreatment and received the Trauma Meaning Making Interview 6-months postpartum.

Procedure

The current study has been approved by the institutional review boards at all universities involved, and a certificate of confidentiality was acquired to further protect participants' privacy.

MACY mothers were assessed at six different time points over 18 months after birth: 6-weeks postpartum, and 4-, 6-, 12-, 15-, and 18-months postpartum. The current study includes data from the 6-weeks, 4-month, and 6-month assessments. IRB approved verbal assent was obtained at 6-week and 4-months telephone interviews, and written informed assent was acquired at the 6-months home visit. During the 6-week and 4-month interviews women

participated in semi-structured telephone interview that focused on demographic variables, current symptoms of PTSD and depression, and child maltreatment histories. The assessments of disorganization and meaning-making were gathered using a semi-structured trauma meaning-making interview at the 6-month home-based assessment. Mothers were paid a total of $50 for the 6-week, 4-month, and the 6-month assessments, and children were given a small toy (cost less than $5) at the 6-month home visit.

Measures

Demographics. Participants' demographic information was collected using a 28-item questionnaire that asked about age, income, ethnicity, education, current living situation, and other demographic information at the 4-month assessment (See Appendix B). A demographic risk variable was created using a coding scheme that assigned values based on summing individual demographic risk factors to create a composite score from 4 empirically derived maternal risk factors: (1) minority race/ethnicity, (2) single, (3) under the age of 22, and (4) annual income of less than $25,000 (Sameroff, 1975). Educational attainment and intellectual ability were not included in the demographic risk score. Participants were given a score of one for each demographic risk factor they identified. These risk factors were then summed creating a score from 0 (no risk factors) to 4 (all four risk factors). This coding scheme is similar to those used in other research on parenting and maternal risk (Brophy-Herb, Stansbury, Bocknek, & Horodynski, 2012; Raikes, Pan, Luze, Tamis-LeMonda, Brooks-Gunn et al., 2006). In the current sample, risk scores ranged from 0-3 (M =1.32, SD =0.70).

Disorganized Representations of Child Maltreatment. Ratings and classifications of disorganized states of mind about childhood maltreatment experiences was assessed from the *Trauma Meaning Making Interview* (TMMI; Simon at al., 2006). The TMMI is a semi-structured interview that assesses individual differences in strategies for processing childhood maltreatment

experiences. The interview asks participants to describe their maltreatment experiences, reactions, and understanding of why the maltreatment happened. Additional questions inquire about the perceived impact of maltreatment experiences and changes in participants' thoughts, feelings, and reactions to their maltreatment experiences since its occurrence. This interview takes approximately 20-30 minutes to administer, and is recorded and transcribed verbatim.

The TMMI is coded for individual differences in trauma processing strategies as well as indices of disorganized trauma representations. As previously described, indicators of disorganization include signs that maltreatment experiences have not been fully cognitively, emotionally, and behaviorally integrated. Indicators include lapses in monitoring of reasoning, lapses in monitoring of discourse, and lapses in monitoring in behavior.

All TMMIs were coded for disorganization using the criteria described by Main and colleagues for coding traumatic discourse in the Adult Attachment Interview (AAI; Main et al., 2002) by myself and another rater (Dr. Simon). Both coders are trained and certified in the AAI coding system. The AAI coding yields continuous scores ranging from 1-9 for each of the three indices of disorganization (reasoning, discourse, behavior) as well as for overall disorganization, with higher scores indicating greater disorganization. Disorganized status is a dichotomous yes/no classification based on the overall disorganization score and fit to a qualitative description. A Disorganized classification is based on an overall disorganization score of at least '5' along with fit to the qualitative description. In the current study, coders rated the three primary indicators of disorganization (lapses in monitoring of reasoning, discourse, and behavior), consistent with prior work with the TMMI by Simon et al. (2006). Assignment of these ratings follow the same coding rules of the AAI and use the same 9-point Likert scale. Reliability checks for scale scores and classifications were conducted throughout the coding

process, with disagreements on scale scores of two or more points or for disorganized status resolved by consensus.

Previous research with the TMMI and similar interviews including the AAI, suggest that disorganization can be reliably identified and rated by trained coders (Hesse, 1999; Simon, Feiring, Noll, & Trickett, 2005; Simon et al., 2008; Simon et al., 2012). Simon et al (2008) supported the validity of the TMMI and found that disorganization and the processing is meaningfully associated with symptoms of depression and PTSD (See Appendix B).

One hundred and eighteen participants received the trauma interview six months postpartum, and of those, ninety-eight were determined to qualify for disorganization coding. Twenty narratives were excluded from coding and subsequent analyses because the childhood experiences described did not qualify as maltreatment by traditional legal or psychological criteria. For example, a participant indicated that she experienced neglect as a child, but she went on to describe an incident when her mother left her in alternate care to work on a daily basis.

Childhood Maltreatment Type. The type of maltreatment was identified as the primary type of maltreatment the participant discussed during the Trauma Meaning Making Interview. Participants were asked at the beginning of the interview to discuss their childhood maltreatment. If the person had multiple types of maltreatment, they were asked to discuss the maltreatment experience they considered the most impactful or traumatic. Types of maltreatment discussed in the TMMI were rated as sexual, physical, emotional or neglect by a trained coder who was blind to study hypotheses. A second coder rated maltreatment type for 25% of the interviews with 100% reliability (See Appendix B). Participant's primary maltreatment experiences described in the TMMI consisted of Sexual Abuse (29%, n=31), Physical Abuse (16.8%, n=18), Emotional Abuse (47.7%, n=51), and Neglect (6.5%, n=7).

Childhood Maltreatment Characteristics. A measure was developed for the MACY study to assess descriptors of all forms of childhood maltreatment reported by the participant, including frequency, developmental period at time of maltreatment, and perpetrator identity. This measure was used to identify and record the characteristics (frequency, perpetrator identity, and developmental period) of the maltreatment experience discussed and coded in the trauma interview (See Appendix B). Frequency of each maltreatment type was assessed using a three-point rating scale ("Just Once," "A Few Times," or "Many Times"). Participants responded in the following manner: Just Once (6.9%, $n = 7$), A Few Times (12.7%, $n = 13$), and Many Times (80.4%, $n = 82$). This variable was not included in the analyses due to lack of variability.

The participant's relationship to the perpetrator was assessed categorically (e.g., 1 = Parental figure, 2 = Sibling, 3 = Trusted Adult, 4 = Other). With the literature linking maltreatment by a caregiver and disorganization in mind, I focused my attention on a dichotomous variable that categorized perpetrators as caregivers or not caregivers (Riggs & Jacobvitz, 2002; Simon et al., 2008). In the current sample, 68.6% ($n = 70$) of the sample identified a caregiver perpetrator and 31.4% ($n = 32$) did not.

The developmental period during which the child maltreatment occurred was also recorded. This measure allowed participants to select either a single age range (e.g. 6-11) or multiple age ranges (e.g. 0-5 and 6-11 combined become 0-11) when appropriate. Participants age ranges are as follows: 0-5 (5.8%, $n = 6$), 6-11 (12.6%, $n = 13$), 12-16 (14.6%, $n = 15$), 0-16 (30.1%, $n = 31$) 0-11, (5.8%, $n = 6$), 6-16 (29.1%, $n = 30$), and 0-5 and 12-16 (1.9%, $n = 2$). In an effort to increase cell sizes and create a conceptually meaningful variable, I recoded participant's developmental period as across all developmental periods (61.2%, $n = 63$) and only one developmental period (38.8%, $n = 40$).

Multi-maltreatment was recorded both as a categorical variable and as a continuous variable that indicated the number of types of maltreatment that the participant endorsed (See Appendix B). Many of the participants in the current sample (76.7%, *n*=79) experienced multiple maltreatment experiences during their childhood years. Far fewer participants (23.3%, *n*=24) experienced only one maltreatment experience. The number of maltreatment experiences ranged from 1 to 5 (*M* =2.59, *SD* =1.30). The number of maltreatment experiences was used in subsequent analyses.

Posttraumatic Stress Disorder Symptoms. Posttraumatic symptoms and diagnostic classification was assessed using the National Women's Study PTSD Module (NWS-PTSD; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). This measure is a version of the Diagnostic Interview Schedule (DIS) that was modified for use in a large epidemiological study of PTSD. The NWS-PTSD assesses all 17 symptoms of PTSD currently and past with follow-up items to assess greater than one-month duration of the syndrome of symptoms and impairment. This measure yields a dichotomous score for PTSD diagnosis and continuous symptom count. This diagnostic interview is administered over the phone by lay interviewers. It was validated during the DSM-IV Field Trial using a primarily clinical sample of 528 women. This measure was compared to face-to-face, clinician-administered Structured Clinical Interview for DSM-III-R (SCID). The kappa coefficient for this measure and SCID was 0.77 with a sensitivity of 0.99 and specificity of 0.79 (Resnick et al., 1993; See Appendix B). In the current sample, the PTSD symptom count score at 6-weeks was relatively low (*M* =3.99, *SD* =3.74). The average PTSD symptom count score increased at 4-months but the standard deviation remained relatively stable (*M* =4.88, *SD* =3.84).

Postpartum Depression Symptoms. Postpartum depression was assessed by the Postpartum Depression Scale (PPDS, (Beck & Gable, 2002). This 35-item scale was developed

to assess postpartum depression. This measure yields a total score from 35-175 and a score greater than 80 suggests major depressive disorder (See Appendix B). This measure has a sensitivity of .78, specificity of .99 and positive predictive value of .93 when compared with SCID depression diagnosis. This measure demonstrates excellent internal consistency ($\alpha = .97$). The average depression symptom score at 6-weeks postpartum was below the clinical cut-off (M =74.42, SD =25.90). The average depression symptom count score and variance decreased at 4-months (M =68.56, SD =22.99).

CHAPTER 3 RESULTS

Preliminary Analyses

Prior to analysis, I screened all study variables for missing values, accuracy of data entry, skewness and kurtosis of the distributions, and the presence of univariate outliers. No out of range values were detected. All variables had plausible means and standard deviations, suggesting accuracy of data entry. Of the ninety-eight cases, data was missing across a number of variables. Specifically, data collected at 6-weeks postpartum for depression and PTSD was missing in thirty-three cases. Two cases were missing the demographic risk variable. Across maltreatment characteristics, five cases were missing the perpetrator identity and the maltreatment frequency variables. Four cases were missing the developmental period and number of additional maltreatments variables. Univariate outliers were examined by computing standardized scores for each variable, and scores above 3.29 suggested the presence of an outlier (Tabachnick & Fidell, 2007). No univariate outliers were identified ($p < .01$).

Skew and kurtosis of study variables were tested by evaluating z-scores created by dividing the skew and kurtosis statistics by the standard error of these values. Values greater than positive or negative 1.96 are considered significantly skewed or kurtotic (Tabachnick & Fidell, 2007). The following study variables were significantly positively skewed: Lapses in Monitoring of Behavior, Depression at 4-months, PTSD at 6-weeks, and PTSD at 4-months (all $ps < .05$). The following study variables were significantly kurtotic: Lapses in Monitoring of Reasoning, Overall Disorganization, and Depression at 4-months (all $ps < .05$). Lapses in Monitoring of Reasoning and Behavior scales were not used in analyses, and therefore were not transformed. The skew and kurtosis of the depression and PTSD scales was minimal, and therefore raw scores were used rather than transformed values.

A review of the variable histograms revealed that the overall disorganization variable was bimodally distributed. Because there is no statistical transformation that corrects for a bimodal distribution non-parametric statistics were used for some of the analyses. For others, the bimodally distributed disorganization scores were recoded in a manner that allowed me to predict the variability in the disorganization scores of individuals with at least moderate levels of disorganization (at or above a 5 on the original 9-point scale). Disorganization scores ranging from 1-4.5 were recoded as zero. Scores from 5-9, were recoded as 1-9, allowing half points to recode as the next highest whole number (e.g., 5 = 1, 5.5 = 2, etc). To reduce the positive skew in the recoded score, it was transformed using a square root transformation to create a score that did not violate the assumption of parametric statistics.

Tables 1 and 2 present descriptive statistics for the categorical (additional maltreatment, maltreatment type, perpetrator identity, and developmental period) and continuous study variables (number of multiple maltreatment experiences, demographic risk, depression, and PTSD). Descriptive statistics of the disorganization variables will be discussed in subsequent sections as they relate to primary study hypotheses.

Instances of emotional maltreatment were most frequently identified in the TMMI (47.7%, n = 51), followed by sexual abuse (29%, n = 31), physical abuse (16.8%, n = 18), and neglect (6.5%, n = 7). Parent-figures were identified as perpetrators for 68.6% (n = 70) of the sample. The majority of maltreatment occurred across all developmental periods (61.2%, n = 63) while a smaller proportion occurred only during one developmental period (38.8%, n = 40). Although the current study focuses on the maltreatment identified in narratives, the majority of participants sample (76.7%, N=79) reported additional forms of maltreatment before the age of 16. The modal number of additional maltreatment types was 2.

The demographic risk in this sample showed somewhat limited variability with a maximum score of 3 on a 4-point scale. The average PTSD symptom count at 6-weeks was relatively low, approximately 4 out of 17 possible symptoms, and increased by 0.89 points at 4-months, though this difference was not statistically significant ($t(70) = -0.90$, $p = 0.37$). The average depression symptom score at 6-weeks postpartum was just below the clinical cut off of 80 and decreased significantly at 4-months by approximately 6 points ($t(70) = 3.00$, $p = 0.00$). These findings suggest that PTSD symptoms increased slightly but not significantly during the postpartum period while depression scores decreased significantly during this period.

Bivariate relations between maltreatment characteristics were examined using chi-sqaure analyses and t-tests. The source of significant chi square values were interpreted using the standardized adjusted residuals, where values greater than positive or negative 1.96 are considered significant (Haberman, 1973). As seen in Table 3, sexual abuse was more frequently perpetrated by a non-caregiver, whereas emotional and physical maltreatment were more frequently perpetrated by a caregiver. Sexual abuse was more likely to occur within rather than across developmental periods, whereas physical and emotional abuse were more likely to occur across versus within developmental periods (see Table 4). In addition, abuse that occurred within a developmental period was more likely to be perpetrated by a non-caregiver, and abuse occurring across developmental periods was more likely to be perpetrated by a caregiver (See Table 5).

T-tests and one-way between subjects ANOVAs were computed to examine relations between maltreatment characteristics and symptom levels. Significant omnibus tests for ANOVAs were followed by Games-Howell post hoc tests to examine pairwise comparisons of group differences of marginal means. This test is appropriate for when group sizes are small and unevenly distributed. Women who were maltreated by a caregiver had higher rates of PTSD at 6-

weeks postpartum than those maltreated by a non-caregiver (see Table 6). Whether the perpetrator was a caregiver was unrelated to depression at 6-weeks and 4-months, and PTSD at 4-months. One-way ANOVAs revealed a significant overall effect for maltreatment type on PTSD symptom counts at 6-weeks (see Table 7). However, none of the posthoc pairwise comparisons were significant. Depression at 6-weeks and 4-months, and PTSD at 4-months were unrelated to maltreatment type. Similarly, psychological symptoms of PTSD and depression (6-weeks and 4-months) were not related to the developmental period during which maltreatment occurred (see Table 8).

Maltreatment characteristics were largely unrelated to the number of additional maltreatment experiences or demographic risk. Those who were maltreated across developmental periods reported significantly more additional maltreatment experiences (see Table 8). Although one-way ANOVAs revealed a significant overall effect for maltreatment type on the number of additional maltreatment experiences, none of the posthoc pairwise comparisons were significant (see Table 7). As seen in Table 7, these analyses also revealed maltreatment type was unrelated to demographic risk. Perpetrator identity was not related to the number of additional maltreatments or demographic risk level (see Tables 6).

Table 9 shows the bivariate correlations between the continuous study variables. Here it can be seen that higher rates of additional maltreatment experiences were significantly related to higher levels of demographic risk, PTSD (6-weeks and 4-months), and depression (6-weeks and 4-months). Lower demographic risk was related to more symptoms of PTSD at 6-weeks but was unrelated to other measures of psychological symptoms. Psychological symptoms were also significantly related within and across time. Higher levels of symptoms of both PTSD and depression early in the postpartum period (6-weeks) were associated with higher rates of those same symptoms later in the period (4-months). Symptoms of PTSD and depression were also

related to one another. Specifically, higher levels of PTSD symptoms at 6-weeks and 4-months were associated with higher rates of depression at both 6-weeks and 4-months.

Primary Analyses

Aim One: Presence and Frequency of Disorganized States of Mind

The first aim of the current project was to determine the frequency and variability of both classification and indicators of disorganized states of mind with regard to child maltreatment. Prior studies suggested that about half of individuals who endorse a trauma history will be classified as disorganized (Bailey et al., 2007; Riggs & Jacobvitz, 2002; Stovall-McClough & Cloitre, 2006; West et al., 2001). In the current sample, which included a broader range of maltreatment experiences than typical of attachment studies, 43.9% (n = 43) of participants were classified as disorganized. Examination of disorganization subscales (lapses in monitoring of reasoning, discourse, and behavior) shed light on the particular types of lapses driving disorganization classification. Of those classified as disorganized, 53% (n = 23) were classified based on a lapse in the monitoring of reasoning; 7% (n = 3) based on a lapse of the monitoring of behavior, and 40% (n = 17) based on serious lapses (scores of 5 or greater) on more than one scale (see Figure 2). Within this latter group, 82% (n = 14) were classified as disorganized based on lapses in both reasoning and behavior, and 18% (n = 3) were classified as disorganized based on lapses in both reasoning and discourse (see Figure 3). None of the narratives were classified as disorganized based on lapses in discourse alone or the combination of lapses in both behavior and discourse.

Descriptive statistics, including mean, standard deviation, and range, were computed for all indicators of disorganization, overall disorganization scores, and disorganized classification (see Table 10). The overall disorganization scale and disorganization subscales included a range of scores and showed adequate variability. The continuous overall disorganization variable was

bimodality distributed (See Figure 4). Specifically, 53% (n = 52) of the sample had scores below the midpoint and 47% (n = 46) had scores above the midpoint. As illustrated in Figure 5, roughly 10% (n = 10) of the sample demonstrated no indicators of disorganization. Approximately, 17% (n = 17) had low disorganization scores, 21% (n = 21) had medium-low disorganization scores. Only 8% (n = 8) had scores at the midpoint, 26% (n = 27) had medium-high disorganization scores, and 17% (n = 17) had high scores on disorganization. The disorganization subscales (reasoning, discourse, and behavior) distributions were each zero-inflated, meaning that at least 30% of the sample had a score indicating the absence of the indicator (i.e., scores of '1').

Aim Two: Associations between Maltreatment Characteristics and Disorganization

The second aim of the current project was to investigate associations between characteristics of participants' childhood maltreatment experiences (i.e., type, developmental period, perpetrator identity) and current disorganization representations. Toward this end, associations between maltreatment characteristics and disorganization were examined for both the categorical disorganized classification and continuous disorganization scores. The approach for each set of analyses was to examine individual as well as combinations of maltreatment characteristics.

Due to small and uneven sizes of the four maltreatment groups, this variable was recoded into a two-group variable for both sets of analyses: 1) physical or sexual abuse and 2) emotional abuse or neglect. This grouping was based on two considerations. First, these groups roughly correspond with the descriptive findings linking maltreatment types to other abuse characteristics (developmental period, perpetrator) while striving to maintain equal group sizes. This provided an empirical basis for examining how interactions between maltreatment type and other maltreatment characteristics may be important in predicting disorganization. In addition, these maltreatment groups are also distinguished by their consideration in attachment studies of

disorganization that use the same coding scheme employed in this study. Traditionally, disorganized states of mind about child maltreatment are coded from AAI discourse about physical or sexual abuse (Main et al., 2002). Extreme instances of emotional maltreatment (e.g., locking a child in a closet for hours) might also classify for coding; however, such instances did not occur in the current sample. The emotional maltreatment described by participants of this study would not meet criteria for disorganization coding. Although these experiences would be captured as dimensions of childhood attachment relationships, they would not be probed (or coded) for evidence of disorganization in traditional attachment studies. Thus, dichotomizing maltreatment type in the current study as sexual/physical versus emotional/neglect permits analyses that may shed light on current theory and practice for assessing disorganized states of mind with regard to child maltreatment.

Disorganized Classification and Maltreatment Characteristics

Associations between maltreatment characteristics and disorganized classification were first tested at the bivariate level and then considering the combination of maltreatment characteristics. Bivariate associations between maltreatment characteristics and disorganized classification were examined using Chi-square tests. Binary logit regression was utilized to compute main and interaction effects of maltreatment characteristics on disorganization classification (Rodgers & Ghosh, 2001). Binary logit models are frequently utilized when the dependent variable is a dichotomous classification. The binary logit model assumes that the underlying random elements of the distribution follow a binomial distribution and the error terms of the regression equation follows a logistic distribution (Rodgers & Ghosh, 2001). Significant interactions were probed by computing estimated marginal means of factor interactions. The marginal means of different groups were then compared using pairwise comparisons.

Chi-square analyses displayed a marginally significant relationship between maltreatment type (four-group variable) and disorganized classification (see Table 11). Only sexual abuse was associated with disorganized classification. In addition, perpetrator identity and developmental period were each associated with disorganization classification (see Table 12). Similar to earlier analyses, both findings were contrary to expectations. In particular, abuse by a non-caregiver and abuse occurring within a developmental period were each associated with being classified as disorganized. Participants abused by a caregiver or across developmental periods were more likely to be classified as organized than disorganized.

Next, a regression model was used to test the additive and interactive effects of maltreatment characteristics on disorganized classification. Main effects for perpetrator identity (non-caregiver, caregiver), maltreatment type (emotional abuse and neglect versus sexual and physical), and developmental period (within one developmental period versus across developmental period) were entered in the equation first to test main effects. Three two-way interactions were entered next, including perpetrator identity X maltreatment type, maltreatment type X developmental period, and perpetrator identity X developmental period. A three-way interaction was initially included the regression; however, a quasi-complete separation occurred in the data for this model. A quasi-complete separation occurs when the outcome variable separates one or more predictors to a certain degree, often times due to the inclusion of combinations of categorical variables with low frequencies. There is no way to statistically alter a quasi-complete separation, but the separation is less likely to occur with a reduced number of predictors or a continuous outcome variable (Allison, 2008; Heinze & Schemper, 2002). For this reason, the model was reduced to main effects and two-way interactions. Table 13 presents the results of the regression analyses and Tables 14-16 present estimated marginal means of pairwise

comparisons. Significant pairwise comparisons are noted in the text by indicating the significance value associated with that test.

Significant main effects emerged for perpetrator identity and developmental period, such that abuse perpetrated by caregivers or occurring across developmental periods were each associated with disorganized classification. No main effect was found for maltreatment type. These effects were qualified by significant interactions between (1) perpetrator identity by maltreatment type (2) developmental period by perpetrator identity, and (3) developmental period by maltreatment type. Posthoc tests to locate the significant interactions included pairwise comparisons of factor group estimated marginal means for the various combinations of categorical indicators using general linear model estimated marginal means (Searle, Speed, & Milliken, 1980). Decomposing the interaction between perpetrator identity X maltreatment type with pairwise comparisons revealed that emotional abuse or neglect by a non-caregiver (n = 7) was predictive of disorganized classification compared to sexual or physical abuse by a non-caregiver (n = 25) and emotional abuse or neglect by a caregiver (n = 48; p=.03 and p=.00, respectively). Sexual or physical abuse by a caregiver (n = 22) was predictive of disorganized classification compared to emotional abuse or neglect by a caregiver (n = 48; p=.00). Decomposing the interaction between perpetrator identity X developmental period revealed being abused by a non-caregiver across developmental period (n = 9) was predictive of disorganization compared to being abused by a non-caregiver within one developmental period (n = 23) and being maltreated by a caregiver across development (n = 54; p=.00 and p=.00, respectively). Being maltreated by a caregiver within one developmental period (n = 16) was predictive of disorganization compared to being maltreated by a caregiver across development (n = 54; p=.00). Decomposing the interaction between developmental period X maltreatment type revealed experiencing emotional abuse or neglect across development (n = 42) was predictive of

disorganized classification compared to experiencing sexual abuse across developmental periods (n = 21; p=.00).

Continuous Disorganization and Maltreatment Characteristics

Parallel analyses were conducted to examine associations between individual and combined maltreatment characteristics and the continuous disorganization scores. First, I used non-parametric tests to examine associations between maltreatment characteristics and overall disorganization scores. Non-parametric statistics compare average mean ranks to determine significant differences between groups. Mean rank scores indicate the average score for that group on the dependent variable.

As displayed in Table 17-18, results from Mann-Whitney U and Kruskal-Wallis tests indicated that experiencing multiple types of maltreatment and the number of maltreatments experienced were each unrelated to the level of disorganization (z = -.75, p = .45, and χ^2 (4, N=94) = 5.40 p= .25 respectively). A significant relationship emerged between maltreatment type and disorganization scores (χ^2 (3, N=97) = 14.49 p= .00). Pairwise comparisons from Mann-Whitney U tests revealed that individuals who were sexually abused demonstrated significantly higher scores on disorganization compared to both physical (z = -2.02, p = .04) and emotional abuse (z = -3.83, p = .00). Comparisons between sexual abuse and neglect, physical abuse and emotional abuse, physical abuse and neglect, and emotional abuse and neglect were not significant (ps > .05).

Mann-Whitney U tests were also computed to examine associations between overall disorganization and perpetrator identity as well as developmental period (see Table 18). Contrary to expectations, individuals who were abused by caregivers had lower rates of disorganization, z = -3.70, p < .05. Specifically, they had an average rank of 40.24, while individuals who were abused by a non-caregiver had an average rank of 62.70 on disorganization. Individuals who

were abused within one developmental period had *higher* scores on disorganization compared to those who were abused across developmental period, $z = -3.52$, $p < .05$. These findings were also contrary to study hypotheses. Individuals abused within one developmental period had an average rank of 60.03, while individuals who were abused across developmental period had an average rank of 39.72 on disorganization.

Next, I used a multiple linear regression model to test the additive and interactive effects of maltreatment characteristics on the transformed disorganization score. Main effects were entered in the first step, followed by two-way interactions in the second step and three-way interactions in the third step. Significant interactions were subsequently probed using procedures that estimate the simple slopes across different levels of the moderator(s) (Aiken & West, 1991; Preacher, Curran, & Bauer, 2006). Results revealed a marginally significant main effect for developmental period but not for perpetrator identity or maltreatment group. This main effect was qualified by a significant three-way interaction among perpetrator identity, maltreatment type, and developmental period (see Table 19). In probing this interaction, I tested a model in which perpetrator identity was the independent variable moderated by both maltreatment type and developmental period. Using procedures developed by Preacher et al. (2006), I estimated the simple slope estimates at two levels of maltreatment type (emotional/neglect versus sexual/physical) and developmental period (within versus across; Aiken & West, 1991; Preacher et al., 2006).

As displayed in Figure 6, post hoc analyses indicated complex effects across both moderators. Specifically, among those sexually or physically abused within one developmental period, being maltreated by caregiver perpetrator ($n = 6$) was associated with higher rates of disorganization and being maltreated by a non-caregiver ($n = 20$) was associated with lower rates of disorganization ($t(84) = 2.79$, $p = 0.01$). This effect occurred in the opposite direction for

those who experienced emotional abuse or neglect. Among those emotionally abused or neglected within one developmental period, being maltreated by a caregiver (n = 10) was associated with lower rates of disorganization and being maltreated by a non-caregiver (n = 3) was associated with higher rates of disorganization ($t(84) = -3.19$, $p = 0.00$).

A different pattern emerged for participants maltreated across developmental periods. Among those sexually or physically abused across development, a non-caregiver perpetrator (n = 5) was associated with higher rates of disorganization and a caregiver perpetrator (n = 16) was associated with lower rates of disorganization ($t(84) = -2.86$, $p = 0.01$). Among those emotionally abused or neglected across development, there were no differences between caregiver (n = 38) and non-caregiver (n = 4) groups ($t(84) = -1.91$, $p = 0.06$). Taken together, these findings suggest that the relationship between perpetrator identity and disorganization depends jointly on maltreatment type and developmental period.

Latent Class Analysis

Given the importance that co-occurring maltreatment characteristics appear to have on an accurate description of the sample as well as mental disorganization on the TMMI, I conducted a Latent Class Analysis (LCA) to empirically identify patterns across categorical maltreatment characteristics (Hagenaars & McCutheon, 2002). LCA identifies homogeneous patterns, or classes, of a latent construct, in this case maltreatment characteristics. Maltreatment variables, including perpetrator identity (non-caregiver versus caregiver), developmental period (within versus across), and maltreatment type (emotional, physical and neglect, and sexual), were used to identify latent classes of maltreatment characteristics profiles that could be used in subsequent structural equation models predicting disorganization from maltreatment characteristics, number of additional maltreatments, demographic risk, and psychiatric symptoms over the postpartum period.

Individuals with similar response patterns across these three maltreatment characteristics were grouped together in classes. Class assignment is generated from posterior membership probabilities (Magidson & Vermunt, 2004). Two and three class solutions were generated and fit statistics were compared to determine best model fit as seen in Table 20. As shown in Table 20, the two-class solution generated the lowest Bayesian Information Criterion value (BIC; Schwarz, 1978). The Lo-Mendell-Rubin likelihood ratio test of model fit was significant for the two-class model ($p < .05$) but not the three-class model. This suggests that the two-class model had superior fit than the model with one less class or more (Lo, Mendell, & Rubin, 2001). Entropy, a measure that indicates the precision of placement into classes and degree to which latent classes are distinguishable, was 0.84, indicating a superior level accuracy (Ramaswamy, Desarbo, Reibstein, & Robinson, 1993). Examination of the two-class solution revealed that group membership was driven by maltreatment type. As illustrated by Table 21, class one (n = 71, 67%) combined emotional and physical abuse and neglect with caregiver perpetrators and abuse that occurred across developmental periods. Also displayed in Table 21, class two (n = 35, 33%) combined sexual abuse with non-caregiver perpetrator and abuse that occurred within one developmental period. Class membership was used in later path analyses as a summary maltreatment characteristic variable. Thus, in subsequent analyses the latent maltreatment class variable will be referring to class membership.

Both disorganized classification and disorganization scores were related to latent maltreatment class membership (see Tables 22-23). Chi-square analyses indicated that rates of disorganization were significantly lower among those in latent class 1 and significantly higher among those in latent class 2 (see Table 22). Consistent with prior analyses, these findings suggest that being emotionally abused across developmental periods by a caregiver was associated lower rates of disorganization whereas being sexually abused by a non-caregiver

within one developmental period was associated with higher rates of disorganization. T-tests comparing disorganization scores by latent class membership provided similar results (see Table 23). Those who were sexually abused by a non-caregiver within one developmental period were scored as more disorganized than those who experienced other forms of maltreatment by a caregiver across developmental periods.

Aim Three: Pathways to Disorganization

Pathways to Disorganization Classification

The final goal of this study was to examine how mothers' childhood maltreatment experiences, postpartum posttraumatic stress symptoms, and postpartum depression are associated with subsequent disorganized status. Prior to completing path analyses, relationships between disorganized classification and covariates and predictors were investigated using t-tests and chi-squares. As displayed in Table 22, membership in latent maltreatment class 2 was associated with being classified disorganization. Other covariates, demographic risk and number of additional maltreatments were not related to disorganization classification (see Table 24). Relations between psychological symptoms and disorganization classification revealed only depression at 4-months was significantly associated with disorganization classification (see Table 24).

The Mplus modeling program was used to test a model of the direct and indirect effects of PTSD and depression on the presence of disorganized states of mind with respect to participants' childhood maltreatment experiences. I expected that the persistence of both depression and PTSD over the postpartum period would predict subsequent disorganized states of mind at a point of time during which most mothers experience symptom relief (6 months postpartum).

The Mplus modeling program (Muthén & Muthén, 1998–2006) was used to estimate the following pathways: (1) the covariates of maltreatment characteristics, number of additional maltreatment types, and demographic risk score predicting PTSD and depression at 6-weeks; (2) the covariates and PTSD at 6-weeks predicting PTSD at 4-months; (3) the covariates and depression at 6-weeks predicting depression at 4-months; (4) the covariates and depression and PTSD at 4-months predicting disorganization classification. Maltreatment characteristics were specified as membership in one of the two latent maltreatment groups. Tests of binary outcome variables in Mplus use logistic regressions to model paths between variables. Overall model fit indices could not be computed because the model required use of montecarlo integration. Tests of direct effects for this model were computed using path coefficients. Tests of indirect effects for this model were computed using the Delta method (Sobel, 1982) to test the statistical significance of indirect effects. With binary outcomes this method provides an unstandardized path coefficient and significance statistic for the indirect effect of a predictor on an outcome through an intermediate variable (or multiple intermediate variables). Standardized path coefficients are not available for indirect effects with binary outcomes. Table 25 shows all path coefficients (β; standardized) for the direct effects leading to each endogenous variable.

Figure 7 illustrates the pathways from maltreatment characteristics, number of additional maltreatments, and demographic risk to the progression of symptoms of PTSD and depression over time into disorganized classification. Latent maltreatment class was directly related to disorganization. Membership in latent maltreatment class 2 was associated with higher scores on disorganization. With respect to pathways through PTSD, greater number of additional maltreatments was significantly related to PTSD at 6-weeks; membership in latent maltreatment class 1 was marginally related to higher PTSD scores at 6-weeks; PTSD at 6-weeks was

significantly related to PTSD at 4-months; and neither PTSD score was related to disorganized classification.

In terms of pathways through depression, greater number of additional maltreatments was significantly related to higher depression scores at 6-weeks; membership in latent maltreatment class 1 was marginally associated with higher depression scores at 6-weeks; membership in latent maltreatment class 2 was marginally related to higher scores on depression at 4-months; depression at 6-weeks was significantly related to depression at 4-months; and higher depression scores at 4-months was in turn significantly related to disorganized classification. Contrary to expectations, these results suggest that symptoms of depression, but not PTSD, during the postpartum period predicted disorganized classification. No other pathways were significant.

In addition to these direct effects, I was also interested in whether PTSD and depression at 6-weeks postpartum exerted indirect effects on disorganized classification through symptom levels at 4-months postpartum. As previously stated Mplus uses the Delta method (Sobel, 1982), which provides a significance statistic for the indirect effect of a predictor on an outcome through an intermediate variable (or multiple intermediate variables). The indirect path from PTSD at 6-weeks to disorganized classification through PTSD at 4-months was not significant ($B = -0.053$, $p = .17$). The indirect path from Depression at 6-weeks to disorganization through Depression at 4-months was significant ($B = 0.016$, $p = .05$).

In summary, results of this path model suggest that maltreatment characterized by sexual abuse by a non-caregiver within developmental periods as well as symptoms of postpartum depression are associated with disorganized representations of childhood maltreatment experiences. Moreover, associations between depression at 6-weeks postpartum to disorganization at 6-months postpartum are mediated by the persistence of depression over time.

Pathways to Continuous Disorganization Scores

Prior to completing path analyses with continuous scores, correlations and t-tests between disorganization scores and covariates and predictors were computed. Similar to analyses with disorganized classification, membership in latent maltreatment class 2 was associated with disorganization scores (see Table 23). As illustrated in Table 26, demographic risk and number of additional maltreatments were not related to disorganization scores. Relations between psychological symptoms and disorganization revealed that only depression at 4-months was significantly associated with disorganization score (see Table 26).

Mplus was also used to test a path model (see Figure 8) of the direct and indirect effects of PTSD and depression on *continuous* disorganization scores (Muthén & Muthén, 1998–2006). I expected that the persistence of both depression and PTSD over the postpartum period would predict subsequent disorganized states of mind at a point of time during which most mothers experience symptom relief (6 months postpartum). The Mplus modeling program (Muthén & Muthén, 1998–2006) was used because it handles missing data with the FIML approach and provides bootstrap confidence intervals for direct and indirect effects. Indirect effects were calculated and tested with the resampling method suggested by MacKinnon, Lockwood, and Williams (2004). This method constructs bootstrap confidence intervals for the indirect effects (indirect effect coefficients do not have *p* values because they are tested via bootstrapping and 95% confidence intervals). The data were resampled a total of 1,000 times.

I examined the direct pathways from latent maltreatment class, number of additional maltreatments, and demographic risk, to symptoms of depression and PTSD, to disorganization scores of those classified as disorganized. For this analysis, I used the recoded disorganization score. The following pathways were estimated: (1) the covariates of latent maltreatment class, number of additional maltreatments, and demographic risk predicting Depression and PTSD at 6-weeks; (2) the covariates and Depression at 6-weeks predicting Depression at 4-months; (3) the

covariates and PTSD at 6-weeks predicting PTSD at 4-months; (4) the covariates and Depression and PTSD at 4-months predicting disorganization. As with the model predicting disorganized classification, effects of maltreatment characteristics were tested using the 2-group latent class membership.

Overall fit was assessed by two absolute fit indices and two incremental fit indices (Hu & Bentler, 1995, 1999; Marsh, Hau, & Wen, 2004). The non-significant Normal Theory Weighted Least Squares Chi Square ($\chi^2 = 0.98$, $p = 0.61$) and RMSEA (RMSEA=0.00) each suggest a good fit for the specified model. In addition, the Non-Normed Fit Index (TFI = 1.00) and Comparative Fit Index (CFI = 1.07) also suggested a good fit of the data to the specified model.

Table 27 shows all path coefficients (β; standardized) for the direct effects leading to each endogenous variable. Figure 8 illustrates the progression of symptoms of PTSD and depression over time into disorganization. Latent maltreatment class membership was directly related to disorganization. Membership in latent maltreatment class 2 was associated with higher scores on disorganization. In terms of pathways through PTSD, number of additional maltreatments was significantly related to PTSD at 6-weeks. Demographic risk and latent maltreatment class membership were marginally related to lower levels of PTSD at 6-weeks. PTSD at 6-weeks was significantly related to PTSD at 4-months, which, in turn, was significantly related to lower rates of disorganization.

With respect to pathways through depression, number of additional maltreatments was associated with higher rates of depression at 6-weeks. Latent maltreatment class membership was marginally related to depression at 6-weeks. Specifically, membership in latent maltreatment class one was associated with higher depression scores. Depression at 6-weeks was significantly related to depression at 4-months. Latent maltreatment class membership was marginally related

to higher levels of depression at 4-months. Depression at 4-months was marginally related to higher scores on disorganization. All other paths were non-significant.

In addition to direct effects, I was also interested in whether PTSD and depression at 6-weeks postpartum indirectly effected on disorganization through symptomatology at 4-months postpartum. Mplus uses the Delta method (Sobel, 1982) to test the statistical significance of indirect effects. This method provides a significance statistic for the indirect effect of a predictor on an outcome through an intermediate variable (or multiple intermediate variables). The indirect path from PTSD at 6-weeks to disorganization through PTSD at 4-months was marginally significant ($B = -0.13$, $p = .06$; $\beta = -.18$). The indirect path from Depression at 6-weeks to disorganization through Depression at 4-months was not significant ($B = 0.034$, $p = .13$; $\beta = .33$).

Overall, results of the path model suggest that latent maltreatment class predicted higher scores on disorganization. Symptoms of both PTSD and depression persisted during the postpartum period, but PTSD and not depression was associated with disorganization scores. Interestingly, contrary to hypotheses higher rates of PTSD were associated with lower scores on disorganization. However, these results should be interpreted with caution given the non-significant correlations between symptoms of PTSD and disorganization.

CHAPTER 4 Discussion

The current study aimed to broaden our understanding of disorganized representations of child maltreatment experiences in a sample of new mothers. Disorganized states of mind have been identified as salient to understanding the consequences of childhood maltreatment, including both parenting outcomes and psychological symptoms (Adam, et al., 1995; Alexander, 1992; Allen, et al., 1996; Ballen, et al., 2010; Fonagy, et al., 1996). This study extends previous literature in a number of ways. First, the current study provides descriptive information about the frequency and variability of not only disorganized scores and status but also subscales of disorganization. This study provides explanatory information about relations between subscales and overall disorganization scores. Second, this project is among a small set of studies that investigated relationships between maltreatment characteristics and disorganized states of mind **(**Bailey et al., 2007; Riggs & Jacobvitz, 2002; Stalker & Davies, 1995**)**. Finally, the current study provides much needed information regarding direct and indirect pathways between demographic risk, maltreatment characteristics, psychological symptoms of PTSD and depression over the postpartum period, and disorganization states of mind.

Presence and Frequency of Disorganization

The first aim of the current project was to assess the frequency and variability of both classification and indicators of disorganized states of mind with regard to child maltreatment. The bimodal distribution of overall disorganization variable suggests that disorganization may be best understood as a dichotomous construct that exhibits variability within low and high categories. The AAI coding system instructs coders to rate disorganization on a 9-point scale and then classify individuals as organized or disorganized with respect to trauma (AAI; Main et al., 2002). Published studies report the presence/absence of disorganization and rarely examine the continuous scores. The current finding that continuous disorganization scores are bimodality

distributed lends support to Main et al.'s (2002) notion that while low level indicators of disorganization might exist, a disorganized state of mind with respect to childhood trauma is indeed a categorical versus dimensional phenomenon.

The current study focused the majority of the continuous analyses on the variance in disorganization scores of those classified disorganized. The nature of the bimodal distribution precluded examination of how factors are associated with the full range of disorganization scores. Larger samples are needed in future research to examine how predictors and outcomes are associated with the lower range of values. It would also be beneficial to compare differences in how outcomes and predictors are associated with the lower versus the upper range of disorganization scores.

The rate of disorganized trauma representations in the current sample (43.9%) was consistent with estimates from other samples, suggesting that roughly half of individuals with childhood trauma demonstrate disorganized states of mind with respect to that trauma (Bailey et al., 2007; Riggs & Jacobvitz, 2002; Stovall-McClough & Cloitre, 2006; West et al., 2001). Unlike these prior studies, the current study assessed disorganized states of mind with respect to maltreatment that occurred both within and outside of the context of attachment relationships. Indeed, the presence of disorganized indicators were not specific to maltreatment perpetrated by caregivers. These findings build on previous literature that expands the definition and conceptualization of the nature of disorganized states of mind (Simon et al., under review). Disorganized states of mind with respect to trauma have traditionally been understood as an aspect of attachment (Main et al., 2002). However, these findings in concert with other studies suggest that disorganization appears to be related to the cognitive processing of trauma (Ehlers & Clark, 2000; Liotti, 1992; Main et al., 2002; Simon et al., 2008; Simon et al., 2012). These

findings suggest that attachment based measures of disorganization including the AAI may not assess the full population of possibly disorganized individuals.

Further research is needed to continue to develop our understanding of the nature and definition of disorganized states of mind with respect to trauma. Such studies could compare the presence and severity of disorganization across equal groups of participants who experienced trauma inside and outside the caregiving relationships. Research could also focus on examining associations between disorganization with respect to loss within and outside of attachment relationships.

By looking at the particular types of lapses coded for disorganization, this study broadened empirical knowledge regarding relations between disorganization subscales and disorganized classification. The findings suggest that lapses in monitoring in reasoning are common among disorganized individuals who experienced childhood maltreatment. Lapses in reasoning about maltreatment experiences often co-occur with lapses in behavior and discourse and appear to drive disorganized classification. Lapses in reasoning can include self-blaming cognitions, psychological confusion, or denial of the frequency and severity of maltreatment experiences. Lapses in monitoring of behavior can include avoidance of situations that are frightening or related to their trauma.

The rate with which lapses in reasoning and behavior co-occurred suggests that it may be important for clinicians to attend to the ways in which these cognitive distortions coexist with disorganized behavior in traumatized clients. In traumatized clients who are parents, it may be particularly important to concentrate on cognitive distortions and disorganized behavior related to parenting and caregiving. Hence, helping individuals' resolve their traumas may require focused intervention on both thoughts and behaviors. Evidence supports that such maladaptive cognitions and disruptions in behavior can be treated using cognitive behavioral and exposure

therapy, though I know of no studies that have assessed the effects of these treatments on disorganized trauma representations (Foa, Hembree, & Olasov Rothbaum, 2007; Resick & Schnicke, 1996). Providing psychotherapy to those with disorganized representations of trauma may assist those individuals in resolving their traumatic experiences. It is also notable that none of the narratives were classified based on lapses in discourse alone. This finding suggests that lapses in discourse may most commonly suggest a mild or moderate absorption with past maltreatment experiences but rarely seem to represent the qualitatively distinct confusion characteristic of disorganized representational systems.

Disorganization and Maltreatment Characteristics

The second aim of this project was to develop a better understanding of relationships between disorganization scores and maltreatment characteristics. When examined individually, bivariate associations between maltreatment characteristics and disorganization revealed a curious set of findings that were inconsistent with my expectations and the extant literature. For example, experiencing sexual abuse was associated with both disorganized classification and scores, while emotional abuse, physical abuse, and neglect were not associated with disorganization. Previous studies suggest that experiences of both physical and sexual abuse were associated with disorganization (Bailey et al., 2007; Riggs & Jacobvitz, 2002; Stalker & Davies, 1995). The current study provided further evidence that experiencing sexual abuse is related to disorganized states of mind, but provided no support for associations between physical abuse and disorganization.

In addition, bivariate analyses supported a relationship between perpetrator identity and both disorganization scores and classification. However, these results occurred in an unexpected direction. In the current sample being abused by a non-caregiver was associated with both disorganization scores and classification. Previous literature suggests that being abused by a

caregiver may disrupt attachment relationships and is positively related to disorganized status (Kobak, et al., 2004; Riggs & Jacobvitz, 2002; Simon, et al., 2008). Moreover, results also revealed a significant relationship between being abused in one developmental period and both disorganization scores and classification. These results were contrary to evidence that suggests that being across developmental periods would represent a more chronic and severe type of abuse is therefore associated with negative outcomes (Kendall-Tackett et al., 1993).

Finally, contrary to expectation, bivariate results revealed experiencing additional forms of child maltreatment was unrelated to disorganization scores or classification (Banyard et al., 2001; Cohen et al., 2008; Lipschitz et al., 1996). This result does suggest that disorganized states of mind can evolve in response any maltreatment experience and may be unrelated to processing of other maltreatment experiences. For instance, an individual may be unresolved with respect to their experiences of sexual abuse, but may have processed and integrated experiences of neglect.

It is important to note, that understanding relations between disorganization and the mere presence or number of multiple maltreatment experiences may not adequately assess the complexity of the multiple maltreatment construct. Multiple maltreatment is a multifaceted phenomenon and can have different meanings and implications depending on a number of factors, including the constellation of the different maltreatment types. For example, experiencing multiple forms of maltreatment that include the use of physical force (sexual or physical) across a number of incidents and perpetrators may be qualitatively different than experiencing multiple forms of emotional abuse from a variety of caregivers. Furthermore, some forms of maltreatment may inherently involve multiple forms of maltreatment. For instance, sexual abuse may involve the use of physical violence or emotional abuse; similarly, physical abuse may involve the communication that the individual is worthless (a hallmark of emotional abuse). Finally, as demonstrated by earlier analyses, maltreatment characteristics are in

themselves complex and interrelated constructs. Additional research focusing on the complexity of maltreatment characteristics as well as constellations of multiple forms of maltreatment is needed to better understand the complicated associations between experiencing multiple maltreatments and disorganization.

To examine whether unexpected bivariate results may be due to pulling out single indicators of multi-faceted maltreatment experiences, additional analyses were conducted to examine maltreatment characteristics as a group of additive and interactive variable. Analyses that took into account the multiple aspects of the maltreatment experience shed more light on the complex associations between maltreatment characteristics and disorganized states of mind. These analyses revealed that disorganized classification and the extent of disorganized states of mind were related to the interaction of features characterizing the maltreatment context.

These findings suggest that the severity of maltreatment should be understood as a complex constellation of factors instead of unitary constructs. The effect of traditional maltreatment characteristics such as perpetrator identity and developmental period may depend upon the type of maltreatment one experienced. For example, we might expect that a caregiver perpetrator is an essential element of emotional abuse. By extension, emotional abuse may also be by definition a chronic and pervasive pattern that pervades childhood. On the other hand, sexual abuse can vary widely in perpetrator identity and developmental period estimates may depend upon a perpetrators access to a victim. Thus, the seemingly unified constructs of developmental period and perpetrator identity are meaningful in different ways across maltreatment type.

The current study conducted various types of analyses to examine the additive and combined effects of maltreatment characteristics (maltreatment type, developmental period, and perpetrator identity) on disorganized states of mind. Patterns of relationships between

maltreatment characteristics and disorganized states of mind emerged across the different analyses. Across a number of analyses, experiencing sexual abuse, and to a lesser extent physical abuse, was linked to higher rates of disorganization. This finding emerged across different perpetrators (caregiver and non-caregiver) and developmental periods (within and across). Associations between sexual abuse perpetrated by a non-caregiver within one developmental period and disorganization appeared to be quite robust as associations were significant even when considering psychological symptoms of PTSD and depression. This finding is consistent with previous literature that found sexual abuse in particular was associated with disorganized status (Bailey et al., 2007; Riggs & Jacobvitz, 2002; Simon et al., 2008). This finding suggests experiencing sexual abuse may complicate trauma processing for individuals and increase risk for developing disorganized states of mind.

One possible explanation for this finding is that sexual and physical abuse experiences are unlike emotional abuse or neglect in that these experiences are episodic in nature and are coercive and frightening. Experiences of sexual abuse are time-limited events that often include physical trauma and threats of harm if the abuse is disclosed. Furthermore, unlike all other maltreatment types, sexual abuse is inherently taboo in Western culture. This taboo frequently results in victims feeling shame or self-blame about their experiences of childhood sexual abuse. Since memories of sexual and physical abuse are episodic in nature and likely shameful and frightening, these memories may be experienced and encoded differently than emotional abuse and neglect. Children who experience sexual or physical abuse are charged with the task of integrating and understanding memories that are often terrifying and distressing to revisit.

The work of Ehlers and Clark (2000) provides further support to this notion that events that are frightening and perceived as threatening to one's safety, like sexual and physical abuse, are encoded and processed differently than memories of distressing events. Henceforth, sexual

and physical abuse experiences may be linked to disorganized states of mind across different perpetrators (non-caregiver and caregiver) and developmental periods (within and across) because of the episodic, frightening, and shameful nature of the experiences and memories. Both the content and the emotional valiance of sexual abuse experiences and memories may result in these instances being cognitively and emotionally separated and processed in a different manner. Additional research, particularly with equal group sizes, is needed to better understand these associations.

In contrast, a number of analyses revealed being maltreated by a non-caregiver perpetrator was associated with higher rates of disorganization for those who experienced emotional abuse or neglect. Thus, experiences of neglect and emotional abuse may represent a breakdown of the self-worth and may be understood and encoded differently. Experiences of emotional abuse or neglect that are perpetrated by a non-caregiver within one period of development are rare. These findings suggest disorganized states of mind can occur with respect to emotional abuse or neglect and may be particularly damaging when perpetrated by a non-caregiver. We might hypothesize that emotional abuse perpetrated by a non-caregiver may be similar to bullying by family members, friends, or strangers. In a recent meta-analytic study, bullying was associated with symptoms of both internalizing (depression and anxiety) and externalizing (violent behavior and aggression; Arseneault, Bowes, Shakoor, 2010). Thus, experiencing emotional abuse by a non-caregiver may be similar to bullying experiences and may represent unique challenges to processing. These difficulties may drive higher rates of disorganization in this group. Given the uncommon nature of emotional abuse being perpetrated by a non-caregiver, further research that includes larger sample sizes would be helpful in better comprehending these associations.

Relations between emotional abuse and neglect and disorganization also have implications for how disorganization is coded. Traditionally the AAI considers experiences of emotional abuse and neglect as untoward parenting that are not examined for disorganized states of mind (Main et al., 1998). These findings suggest that for some experiences of emotional abuse and neglect can result in disorganized states of mind. These findings challenge traditional conceptualizations of the types of experiences that should be coded for examination of disorganized states of mind. Coding these experiences in both attachment and trauma-related interviews would likely better represent the complex population of individuals who demonstrate disorganized representations of childhood maltreatment. Future research with adequate sample sizes should focus on building a better understanding of the rate at which disorganization occurs across maltreatment types.

Pathways to Disorganized Classification Regarding Maltreatment

The final aim of the current project is to investigate pathways between maltreatment and demographic characteristics and psychological symptoms and disorganization as well as pathways between psychological symptoms and disorganization. The goal of this aim was to develop a better understanding of important factors that predict variability in disorganization. I initially hypothesized that I would examine a path analysis predicting disorganized classification, and I would compare that model to a model predicting variability in disorganization scores. However, the bimodal distribution of continuous disorganization scores suggested that disorganization is best understood as a categorical construct.

Based on these findings, I began by computing the hypothesized path model using disorganization classification. I investigated how maternal maltreatment characteristics, number of additional maltreatments, and demographic risk factors are associated with psychological

symptoms and disorganized classification. I then examined pathways from PTSD and depression across the postpartum period to subsequent disorganized classification.

Demographic Risk, Multiple Maltreatment, and Maltreatment Characteristics

The current study demonstrated that aspects of early maltreatment experiences are related to psychological symptoms during the postpartum period, even when accounting for the co-variation of PTSD and depression. Experiencing a greater number of maltreatment experiences was associated with symptoms of both PTSD and depression early in the postpartum period. Consistent with prior studies linking multiple maltreatment to negative outcomes, including higher rates of PTSD and depression, the current findings offer evidence of these links during the postpartum period (Banyard et al., 2001; Cohen et al., 2008; Lipschitz et al., 1996).

Experiencing emotional or physical abuse or neglect by a caregiver across developmental periods was marginally associated with postpartum symptoms of depression and PTSD. This finding is consistent with previous literature that links symptoms of depression and experiencing emotional and physical abuse and raise the possibility that early experiences of non-sexual maltreatment render women more psychologically vulnerable in the wake of childbirth (Chapman et al., 2004; Collishaw et al., 2007; Davis et al., 2001; Moehler et al., 2007; Nikulina et al., 2011; Vega et al., 2011; Widom et al., 2007).

Contrary to previous studies socio-demographic risk was not significantly associated with either psychological symptoms or disorganized status (Alim et al., 2006; Bailey et al., 2007; Davis et al., 2008; Parto et al., 2011; Schwartz et al., 2005). This finding is surprising given the wealth of literature linking demographic risk and poorer adaptation after trauma. However, demographic risk factors were limited in the current sample. The reduced variability of the demographic risk variable as well as the lower rates of demographic risk in this sample may have made it more difficult to detect such an effect. These findings suggest that in this sample,

characteristics of childhood maltreatment experiences may be more important than socio-demographic risk factors in understanding who will demonstrate psychological symptoms and disorganized representations of trauma in the postpartum period. It would be beneficial for future research to examine the effects of individual socio-demographic risk factors such as educational attainment rather than using a summary score.

Pathways to Disorganization through PTSD

Structural equation models examining direct pathways and indirect pathways from symptoms of PTSD across the postpartum period to disorganization classification revealed stability in PTSD over the postpartum period but no association between PTSD at 4-months and disorganization classification. The indirect path from PTSD at 6-weeks to disorganization through PTSD at 4-months was marginally significant.

Contrary to some previous literature, associations between disorganized representations and symptoms of PTSD were not detected (Simon et al., 2012; Stovall-McClough & Cloitre, 2006). The current findings are, however, consistent with a study by Bailey et al. (2007), in which disorganization was unrelated to traditional symptoms of PTSD. Instead, this study and others have established associations between disorganized representations and symptoms of complex trauma (Bailey et al., 2007; West et al., 2001). Specifically, individuals classified as disorganized have higher rates of dissociation, inconsistent sense of self, and difficulty building and maintaining healthy relationships (Bailey et al., 2007; West et al., 2001). This small body of literature suggests that disorganized processing of trauma may be related to more general aspects of social functioning and emotional and cognitive regulation than traditional symptoms of posttraumatic stress.

For individuals with disorganized representations of trauma, symptoms of PTSD might manifest in the immediate wake of traumatic experiences, but over time these symptoms may be

replaced by symptoms of complex trauma. Thus, we might anticipate that difficulties in integrating and processing trauma could have widespread influences on relationship and emotion regulation skills as well as a stable self-concept. For instance, a common indicator of disorganized states of mind is behaviors or cognitions that underlie the notion that all people are possible perpetrators, regardless of past behavior. We might imagine that holding such a stance towards relationships and others could result in difficulty in building healthy intimate relationships.

Additional research is needed in this area to clarify relationships between disorganized states of mind and symptoms of PTSD. Modeling relationships between disorganization and traditional symptoms of PTSD as well as symptoms of complex PTSD would provide additional information about possible differential associations. Longitudinal studies that assess disorganization and psychological symptoms in the immediate aftermath of trauma, and at subsequent points in development, would provide the best assessment of how disorganization and psychological symptoms and complex trauma interact and change over time.

Pathways to Disorganization through Depression

I anticipated direct pathways and indirect pathways from symptoms of depression across the postpartum period to disorganization classification. Results from the model predicting disorganized classification revealed a significant path from depression at 6-weeks to depression at 4-months and a significant path from depression at 4-months to disorganized classification. The indirect path from depression at 6-weeks to disorganization through depression at 4-months was significant for disorganized classification.

These findings are consistent with the small body of literature that has investigated associations between depression and disorganized classification. Previous studies found higher rates of depression were associated with increased disorganization (Borelli, et al., 2010; Ivarsson,

et al., 2010). The current study builds on these results by establishing that the persistence of symptoms of depression over time (from 6-weeks to 4-months) is associated with disorganized classification in new mothers. These results suggest that while many women experience postpartum depression, links to disorganization are salient for women whose depression has persisted until late into the postpartum period.

Previous studies suggest that depression may result from ruminating related to trauma memories, we might hypothesize that many women experience symptoms of depression in the wake of childbirth, but it is continued symptoms of depression and rumination on trauma related memories that illustrates links to disorganization (Ehring et al., 2008; Nolen-Hoeksema & Morrow, 1991). Clinically, we might anticipate that mothers who experience depression, and possibly ruminate on negative aspects of previous trauma, may be more prone to cognitive distortions and behavioral disruptions consistent with disorganization. Future studies could further investigate this hypothesis by assessing the content of depressive rumination as well as symptoms of PTSD in the wake of trauma and across the postpartum period. Such research would help to clarify links between depression, trauma material, and disorganized states of mind.

Pathways to Disorganization Scores

A model predicting recoded disorganization scores was computed to investigate meaningful variability within individuals classified as disorganized. Although the pathways from maltreatment variables to postpartum symptoms were consistent with the categorical model, no interpretable paths emerged between symptoms of PTSD and depression and disorganization scores. As stated earlier, the bimodal distribution of the continuous scores suggests that it may be more meaningful to examine pathways to disorganized states of mind rather than the extent of disorganization.

Limitations

Although the current study provides useful findings regarding disorganized states of mind with respect to child maltreatment, several limitations are worth noting. The causal nature of relationships between study variables and disorganization cannot be inferred due to the non-experimental nature of the data. While relationships were found between many study variables, the causality of those relationships remains unknown.

The design of the current study makes it impossible to know if our assessment of disorganization at 6-months postpartum represents the persistence of disorganized states of mind across pregnancy and the postpartum period or a new phenomenon triggered by the transition to motherhood. Additional longitudinal research is needed to assess relationships between important variables and disorganized states of mind over time. Longitudinal studies of disorganization that assess disorganized states in mind in the immediate aftermath of child maltreatment as well as important points in human development (marriage, childbirth, postpartum period) would provide information about the origins and maintenance of disorganization related to child maltreatment. Assessing psychological symptoms at the same points in time would provide information about how psychological symptoms relate to disorganized states of mind over time. Future research should focus on such a design to build a better understanding of factors that influence both the onset and maintenance of disorganization across time.

Yet another limitation was the number of models assessed. The current study assessed the fit of two hypothesized model and although these models demonstrated good fit to the data, this study only tested one possible model of associations between variables. Future research is needed to test competing models. Sample size was yet another limitation of the current study. Only ninety-eight of the one hundred and eighteen Trauma Meaning Making Interviews were

deemed appropriate for coding. This relatively small sample size placed an upper limit on power to detect significant effects.

The limited sample size also limited the number of pathways that could be modeled in path analyses. Ideally the various maltreatment characteristics (perpetrator identity, developmental period, and maltreatment type) as well as their interactions would have been modeled in the path analyses; however other statistical methods were used because of limited sample size. It would be beneficial for future research to investigate these constructs using larger sample sizes. Furthermore, rates of PTSD in the current sample were low. For instance, at the six-week time point only 16% of the sample had clinically significant symptoms of PTSD. Low rates of symptoms of PTSD translated statistically into an issue of limited variability.

Another limitation of the current study was the uneven distribution of maltreatment type in the data set. Nearly half of the sample (47.6%) opted to discuss experiences of emotional abuse during the interview, while far fewer participants discussed experiences of sexual abuse (29%), physical abuse (16.8), and neglect (6.5%). Maltreatment type is a hallmark characteristic of childhood maltreatment and is central to understanding the influence of other maltreatment characteristics. Even cell sizes across these groups would have allowed statistical analyses to detect significant differences between these groups and other important study variables. Furthermore, the sexual abuse group exhibited an uncharacteristically high representation of non-caregiver perpetrators. Future research should focus on collecting equal numbers of participants in the different maltreatment type groups.

Clinical Implications

This study provides important directions for the assessment and treatment of new mothers who have experienced childhood maltreatment. First, this study found that roughly half of women in the sample evidenced disorganized classification with respect to their childhood

maltreatment. This finding underscores the need for assessment and screening of women who have experienced childhood maltreatment. Second, the current study found links between maltreatment characteristics and postpartum symptoms. This study found that unique constellations of maltreatment characteristics were associated with disorganization. Specifically, experiencing more threatening and coercive types of maltreatment (sexual or physical abuse) was associated with disorganization across different perpetrators and developmental periods. One explanation for this is the episodic, frightening, and shameful nature of the experiences and memories. This emphasizes the importance of providing screening and psychotherapeutic treatment to individuals who experience childhood sexual abuse. As previously stated, cognitive and behavioral disruptions that are consistent with disorganization may improve with cognitive behavioral (CBT) and exposure based treatments for trauma (PE; Foa, et al., 2007; Resick & Schnicke, 1996).

This study also found associations between depression symptoms late in the postpartum period and disorganized status. These findings suggest that symptoms of depression across the postpartum period were linked to disorganized states of mind at the close of the postpartum period. These results highlight the importance of providing treatment for symptoms of depression prior to the postpartum period. A number of psychotherapeutic treatments, including CBT, have been found to be efficacious in reducing symptoms of depression related to traumatic experiences (Resick & Schnicke, 1996).

These findings also highlight important clinical implications for links between parenting and disorganized states of mind. Previous research suggests that mothers' disorganized representations of childhood traumas are associated with a number of negative outcomes for both parents and children (Ballen, et al., 2010). These outcomes include maladaptive parenting strategies that are subsequently linked to disorganized attachment and poor emotion regulation in

children (Jacobvitz, et al., 2006; Lyons-Ruth & Block 1996; Lyons-Ruth & Jacobvitz, 2008; Moehler, et al., 2007). Given this increased risk, it is especially important to treat symptoms of mental illness in mothers' with disorganized representations of their maltreatment experiences. Psychotherapy can assist mothers' in resolving their traumatic experiences and reduce psychological symptoms. Proper treatment may in turn help to decrease the intergenerational impact of child maltreatment and disorganized states of mind.

APPENDIX A: TABLES & FIGURES

Table 1
Frequency of Categorical Study Variables

Scale	Percent Frequency	*n*
Additional Maltreatments		
Multiple	76.7%	79
One	23.3%	24
Maltreatment Type		
Sexual Abuse	29.0%	31
Physical Abuse	16.8%	18
Emotional Abuse	47.7%	51
Neglect	6.5%	7
Developmental Period		
Within	38.8%	40
Across	61.2%	63

Table 2
Descriptive Statistics for Study Variables

	n	*M (SD)*	Skew	Kurtosis	Possible Range	Observed Range
Additional Maltreatments	103	2.59 (1.30)	0.42 (0.24)	-0.93 (0.47)	1-5	1-5
Demographics	115	1.32 (0.70)	0.43 (0.23)	0.20 (0.45)	0-4	0-3
PTSD T1	74	3.99 (3.74)	1.00 (0.28)	0.69 (0.55)	0-17	0-15
PTSD T2	112	4.88 (3.84)	0.81(0.23)	0.27 (0.45)	0-17	0-17
Depression T1	74	74.42 (25.90)	0.48 (0.28)	-0.46 (0.55)	35-175	36-146
Depression T2	112	68.56 (22.99)	0.75 (0.23)	0.88 (0.45)	35-175	35-155

Note. Additional Maltreatments = number of additional maltreatments; Demographics = Demographic Risk; T1= 6-weeks; T2 = 4-months.

Table 3
Chi-square Analyses of Maltreatment Type and Perpetrator Identity

	Perpetrator			
Maltreatment Type	Non-Caregiver	Caregiver	χ^2	Φ
Sexual	24	6	47.56**	0.68**
	(6.8)	(-6.8)		
Physical	1	16		
	(-2.5)	(2.5)		
Emotional	7	41		
	(-3.4)	(3.4)		
Neglect	0	7		
	(-1.9)	(1.9)		

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Adjusted standardized residuals appear in parenthesis below group frequencies.

Table 4
Chi-square Analyses of Maltreatment Type and Developmental Period

	Developmental Period			
Maltreatment Type	Within	Across	χ^2	Φ
Sexual	24	7	28.07**	0.52**
	(5.3)	(-5.3)		
Physical	3	14		
	(-2.0)	(2.0)		
Emotional	11	37		
	(-3.1)	(3.1)		
Neglect	2	5		
	(-0.6)	(0.6)		

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Adjusted standardized residuals appear in parenthesis below group frequencies.

Table 5
Chi-square Analyses of Perpetrator Identity and Developmental Period

	Developmental Period			
Perpetrator	Within	Across	χ^2	Φ
Caregiver	23	9	22.34**	0.47**
	(4.7)	(-4.7)		
Non-caregiver	16	54		
	(-4.7)	(4.7)		

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Adjusted standardized residuals appear in parenthesis below group frequencies.

Table 6
T-test Analyses of Perpetrator Identity and Study Variables

	N	*M*	*SD*	*t*	*df*
Number of Additional Maltreatments					
Non-Caregiver	32	0.69	0.47		
Caregiver	70	0.81	0.39	-1.33	51
Demographic Risk					
Non-Caregiver	32	1.25	0.88		
Caregiver	68	1.34	0.54	-0.52	42
PTSD 6-weeks					
Non-Caregiver	22	2.86	3.03		
Caregiver	44	4.95	4.00	-2.16*	64
PTSD 4-months					
Non-Caregiver	30	4.43	3.31		
Caregiver	68	5.22	4.08	-0.93	96
Depression 6-weeks					
Non-Caregiver	22	69.91	25.42		
Caregiver	44	78.43	26.59	-1.26	43
Depression 4-months					
Non-Caregiver	30	66.20	23.40		
Caregiver	68	69.94	23.97	-0.72	96

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$.

Table 7
Summary of ANOVAs Examining Mean Differences in Study Variables by Maltreatment Type

	Maltreatment Type	Mean	F	df	*p*
Additional Maltreatments	Sexual	2.58	2.79[a]	3, 99	0.04
	Physical	2.88			
	Emotional	2.33			
	Neglect	3.71			
Demographic Risk	Sexual	1.42	0.54	3, 101	0.66
	Physical	1.22			
	Emotional	1.28			
	Neglect	1.30			
PTSD T1	Sexual	2.91	4.51[a]	3, 65	0.01
	Physical	6.00			
	Emotional	3.52			
	Neglect	8.25			
PTSD T2	Sexual	4.73	0.85	3, 98	0.47
	Physical	4.94			
	Emotional	4.96			
	Neglect	7.29			
Depression T1	Sexual	65.86	2.75	3, 65	0.06
	Physical	87.81			
	Emotional	75.22			
	Neglect	89.00			
Depression T2	Sexual	67.67	0.52	3, 98	0.67
	Physical	68.78			
	Emotional	67.81			
	Neglect	70.43			

Note. [a] No significant differences found in post hoc comparisons. Additional Maltreatments = Number of additional maltreatments; T1= 6-weeks; T2 = 4-months.

Table 8

T-test Analyses of Developmental Period and Study Variables

	N	*M*	*SD*	*t*	*df*
Number of additional maltreatments					
Within	40	0.65	0.48		
Across	63	0.84	0.37	-2.14*	67
Demographic Risk					
Within	39	1.36	0.81		
Across	62	1.29	0.55	0.47	60
PTSD 6-weeks					
Within	26	3.62	3.81		
Across	40	4.68	3.81	-1.12	64
PTSD 4-months					
Within	37	4.43	3.63		
Across	62	5.44	4.08	-1.23	97
Depression 6-weeks					
Within	26	70.77	24.69		
Across	40	78.73	27.17	-1.20	64
Depression 4-months					
Within	37	64.51	22.71		
Across	62	71.61	24.01	-1.45	97

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$.

Table 9
Correlations between Continuous Study Variables

	1	*2*	*3*	*4*	*5*	*6*
1. Additional Maltreatments	1.000					
2. Demographic Risk	0.197*	1.000				
3. PTSD 6-weeks	0.342**	-0.261*	1.000			
4. PTSD 4-months	0.286**	0.018	0.608**	1.000		
5. Depression 6-weeks	0.249*	-0.169	0.753**	0.497**	1.000	
6. Depression 4-months	0.231*	0.072	0.556**	0.644**	0.664**	1.000

Note. ^{+}p <.10. *p<.05. **p<.01. Additional Maltreatments = Number of additional maltreatments.

Table 10
Descriptive Statistics for Disorganization Scales

	N	*M (SD)*	Skew (SE)	Kurtosis (SE)
Overall Disorganization	98	5.10 (2.32)	0.17 (0.24)	-1.33 (0.48)
Lapses in Monitoring of Reasoning	98	3.99 (2.66)	0.27 (0.24)	-1.41 (0.48)
Psychological Confusion	98	3.40 (2.68)	0.60 (0.24)	-1.17 (0.48)
Self-Blame	98	1.76 (1.51)	2.23 (0.24)	4.60 (0.48)
Unsuccessful Denial	98	1.42 (1.28)	3.23 (0.24)	9.59 (0.48)
Fears of Being Taken Over [a]	98	1.00 (0.00)		
Lapses in Monitoring of Discourse	98	2.31 (1.24)	0.54 (0.24)	-0.93 (0.48)
Disoriented Speech	98	2.25 (1.21)	0.70 (0.24)	-0.57 (0.48)
Unfinished Sentences	98	1.13 (0.46)	4.06 (0.24)	18.43 (0.48)
Prolonged Silences	98	1.12 (0.47)	4.23 (0.24)	17.37 (0.48)
Unusual Attention to Detail	98	1.02 (0.20)	9.90 (0.24)	98.00 (0.48)
Sudden Change in Topic	98	1.02 (0.20)	9.90 (0.24)	98.00 (0.48)
Lapses in Monitoring of Behavior	98	2.85 (2.25)	1.20 (0.24)	0.46 (0.48)

Note. [a] Scores were "1" (i.e., they never occurred).

Table 11
Chi-square Analyses of Maltreatment Type and Disorganization

	Disorganization			
Maltreatment Type	No	Yes	χ^2	Φ
Sexual	12	19	6.38+	0.26+
	(-2.5)	(2.5)		
Physical	10	7		
	(0.2)	(-0.2)		
Emotional	29	14		
	(1.9)	(-1.9)		
Neglect	4	2		
	(0.5)	(-0.5)		

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Adjusted standardized residuals appear in parenthesis below group frequencies.

Table 12
Chi-square Analyses of Maltreatment Type by Disorganized Classification and Developmental Period by Disorganized Classification

	Disorganized Classification			
Perpetrator	No	Yes	χ^2	Φ
Non-caregiver	10	18	8.22**	-0.30**
	(-2.9)	(2.9)		
Caregiver	44	21		
	(2.9)	(-2.9)		
Developmental Period				
Within	15	21	5.94*	-0.25*
	(-2.4)	(2.4)		
Across	39	19		
	(2.4)	(-2.4)		

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Adjusted standardized residuals appear in parenthesis below group frequencies.

Table 13
Summary of Binomial Logit Regressions for Variables Predicting Disorganization

Variable	B	SE B	Wald Z	*p*
Perpetrator	2.49	1.26	3.90*	0.05
Maltreatment	0.04	0.70	0.00	0.96
Developmental	23.12	0.76	925.49**	0.00
Perpetrator X Maltreatment	44.29	10.52	17.72**	0.00
Maltreatment X Developmental	-23.15	1.18	384.69**	0.00
Perpetrator X Developmental	-24.40	1.34	331.07**	0.00

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. N=97. Perpetrator = perpetrator identity; Maltreatment = maltreatment type; Developmental = developmental period.

Table 14
Pairwise Comparisons of Estimated Marginal Means for Interactions between Maltreatment Type and Perpetrator Identity on Disorganized Classification

(I) Perpetrator X Maltreatment	(J) Perpetrator X Maltreatment	Estimated Marginal Mean Diff (I-J)	SE	95% Confidence Interval	
				Lower Bound	Upper Bound
Non-caregiver X Emotional/Neglect	Non-caregiver X Sexual/Physical	32.75**	10.49	12.18	53.32
	Caregiver X Emotional/Neglect	34.58**	16.55	2.14	67.01
	Caregiver X Sexual/Physical	23.04+	12.84	-2.13	48.20
Caregiver X Emotional/Neglect	Non-caregiver X Sexual/Physical	-1.83	7.41	-16.35	12.70
Caregiver X Sexual/Physical	Non-caregiver X Sexual/Physical	9.71	0.00	9.71	9.71
	Caregiver X Emotional/Neglect	11.54**	0.59	10.38	12.70

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Perpetrator = perpetrator identity; Non-caregiver = non-caregiver perpetrator; Caregiver = caregiver perpetrator; Maltreatment = maltreatment type; Emotional/Neglect = emotional abuse or neglect; Sexual/Physical = sexual abuse or physical abuse.

Table 15
Pairwise Comparisons of Estimated Marginal Means for Interactions between Perpetrator Identity and Developmental Period on Disorganized Classification

(I) Perpetrator X Developmental	(J) Perpetrator X Developmental	Estimated Marginal Mean Diff (I-J)	SE	95% Confidence Interval	
				Lower Bound	Upper Bound
Non-caregiver X Within	Caregiver X Within	0.23	5.26	-10.08	10.54
	Caregiver X Across	11.77	18.82	-25.11	48.65
Non-caregiver X Across	Non-caregiver X Within	12.86**	1.34	10.22	15.49
	Caregiver X Within	13.09	0.00	13.09	13.09
	Caregiver X Across	24.63**	5.41	14.03	35.23
Caregiver X Within	Caregiver X Across	11.54**	0.59	10.38	12.70

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Perpetrator = perpetrator identity; Non-caregiver = non-caregiver perpetrator; Caregiver = caregiver perpetrator; Developmental = developmental period; Across= across developmental periods; Within = within one developmental period.

Table 16
Pairwise Comparisons of Estimated Marginal Means for Interactions between Developmental Period and Maltreatment Type on Disorganized Classification

(I) Developmental X Maltreatment	(J) Developmental X Maltreatment	Estimated Marginal Mean Diff (I-J)	SE	95% Confidence Interval	
				Lower Bound	Upper Bound
Within X Emotional/Neglect	Within X Sexual/Physical	-0.97	5.26	-11.28	9.34
	Across X Sexual/Physical	9.95	13.83	-17.17	37.06
Across X Emotional/Neglect	Within X Emotional/Neglect	12.24	0.00	12.24	12.24
	Within X Sexual/Physical	11.26	0.00	11.26	11.26
	Across X Sexual/Physical	22.18**	5.31	11.78	32.58
Within X Sexual/Physical	Across X Sexual/Physical	10.92	12.79	-14.15	35.99

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Developmental = developmental period; Across= across developmental periods; Within = within one developmental period. Maltreatment = maltreatment type; Emotional/Neglect = emotional abuse or neglect; Sexual/Physical = sexual abuse or physical abuse.

Table 17
Kruskal-Wallis Analysis of Maltreatment Characteristics and Disorganization

	N	*Mean Rank*	χ^2	*df*
Number of additional maltreatments				
1.00	21	45.26		
2.00	27	44.35		
3.00	20	42.93		
4.00	16	50.56		
5.00	10	64.95	5.40	4
Maltreatment Type				
Sexual	31	64.44		
Physical	17	45.76		
Emotional	43	39.66		
Neglect	6	45.33	14.49**	3

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$.

Table 18

Mann-Whitney U Analyses of Maltreatment Characteristics and Disorganization

	N	*Mean Rank*	*U*	*z*
Number of additional maltreatments				
No	20	43.45		
Yes	74	48.59	659.00	-0.75
Maltreatment Type – Sexual				
No	66	41.75		
Yes	31	64.44	544.50	-3.72**
Maltreatment Type – Physical				
No	80	49.69		
Yes	17	45.76	625.00	-0.52
Maltreatment Type – Emotional				
No	54	56.44		
Yes	43	39.66	759.50	-2.93**
Maltreatment Type – Neglect				
No	91	49.24		
Yes	6	45.33	251.00	-0.33
Perpetrator Identity				
Non-Caregiver	28	62.70		
Caregiver	65	40.24	470.50	-3.70**
Developmental Period				
Within	36	60.03		
Across	58	39.72	593.00	-3.52**

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$.

Table 19
Hierarchical Multiple Regression Analyses of Maltreatment Characteristics Predicting Disorganization

		Disorganization	
Predictor		ΔR^2	β
Step 1		0.13	
	Perpetrator Identity		-0.14
	Maltreatment Type		0.12
	Developmental Period		-0.20+
Step 2		0.14	
	Perpetrator X Maltreatment		0.81**
	Perpetrator X Development		-0.47+
	Maltreatment X Development		-0.47*
Step 3		0.05	
	Perpetrator X Maltreatment X Development		-1.03*
	Overall R^2	*F*	*df*
	0.32	6.11*	1

Note. ^{+}p <.10. *p<.05. **p<.01. Perpetrator = perpetrator identity; Developmental = developmental period; Maltreatment = maltreatment type.

Table 20
Fit Statistics of Latent Class Analysis (N = 106)

Model tested	Loglikelihood	*Df*	BIC	Entropy	*p* –value for Lo-Mendell-Rubin
2-Classes	-208.996	1	469.29	0.84	0.00
3-Classes	-207.44	1	494.17	0.79	1.00

Note. N = 106.

Table 21
Chi-square Analyses of Latent Maltreatment Class by Maltreatment Characteristics

	Latent Maltreatment Class			
	1.00	2.00	χ^2	Φ
Maltreatment Type				
Sexual	0	31	88.98**	0.92**
	(-9.4)	(9.4)		
Physical	17	1		
	(2.7)	(-2.7)		
Emotional	47	3		
	(5.6)	(-5.6)		
Neglect	7	0		
	(1.9)	(-1.9)		
Perpetrator Identity				
Non-caregiver	4	28	60.80**	-0.78**
	(-7.8)	(7.8)		
Caregiver	63	6		
	(7.8)	(-7.8)		
Developmental Period				
Within	12	28	37.18**	-0.60**
	(-6.1)	(6.1)		
Across	55	7		
	(6.1)	(-6.1)		

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Adjusted standardized residuals appear in parenthesis below group frequencies. Emotional = emotional abuse; Sexual = sexual abuse; Physical = physical abuse. Non-caregiver = non-caregiver perpetrator; Caregiver = caregiver perpetrator; Across= across developmental periods; Within = within one developmental period.

Table 22
Chi-square Analyses of Latent Maltreatment Class by Disorganized Classification

	Disorganization			
Maltreatment Group	No	Yes	χ^2	Φ
Class One	42	21	8.08**	0.29**
	(2.8)	(-2.8)		
Class Two	12	21		
	(-2.8)	(2.8)		

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Adjusted standardized residuals appear in parenthesis below group frequencies.

Table 23

T-tests of Mean Differences in Disorganization Scores by Latent Maltreatment Classes

	N	*M*	*SD*	t	df
Class 1	63	2.49	2.34		
Class 2	33	4.58	3.12	-3.37**	51

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$.

Table 24

T-Test Analyses of Disorganized Classification and Maltreatment Class, Demographic Risk, and Psychological Symptoms

	N	*M*	*SD*	*t*	*df*
Number of Additional Maltreatments					
Not Disorganized	54	2.48	1.19		
Disorganized	40	2.87	1.40	-1.43	92
Demographic Risk					
Not Disorganized	54	1.30	0.60		
Disorganized	40	1.43	0.77	-0.92	76
PTSD 6-weeks					
Not Disorganized	38	3.87	3.58		
Disorganized	27	4.48	4.11	-0.64	63
PTSD 4-months					
Not Disorganized	54	4.61	3.74		
Disorganized	41	5.32	4.03	-0.88	93
Depression 6-weeks					
Not Disorganized	38	75.89	26.46		
Disorganized	27	75.74	26.27	0.02	63
Depression 4-months					
Not Disorganized	54	63.91	21.26		
Disorganized	41	73.15	23.99	-1.98*	93

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$.

Table 25

Structural Equation Model Results for Pathways to Disorganized Classification

	Estimate	S.E.	Est./S.E.	*p*	β
Depression T1 ON					
Demographic Risk	-3.47	4.35	-0.80	0.42	-0.09
Latent Maltreatment Class	-10.42+	5.93	-1.76	0.08	-0.19
Additional Maltreatments	5.93**	2.33	2.55	0.01	0.28
PTSD T1 ON					
Demographic Risk	-0.89	0.59	-1.50	0.13	-0.16
Latent Maltreatment Class	-1.49+	0.81	-1.85	0.06	-0.19
Additional Maltreatments	1.23**	0.32	3.84	0.00	0.42
Depression T2 ON					
Depression T1	0.64**	0.06	10.26	0.00	0.76
Demographic Risk	2.40	2.83	0.85	0.40	0.07
Latent Maltreatment Class	6.51+	3.84	1.69	0.09	0.14
Additional Maltreatments	-0.32	1.51	-0.21	0.83	-0.02
PTSD T2 ON					
PTSD T1	0.59**	0.11	5.44	0.00	0.57
Demographic Risk	0.74	0.55	1.35	0.18	0.13
Latent Maltreatment Class	0.56	0.73	0.76	0.45	0.07
Additional Maltreatments	0.11	0.31	0.34	0.74	0.04
Disorganization ON					
Depression T2	0.03*	0.01	1.95	0.05	0.47
PTSD T2	-0.09	0.06	-1.44	0.15	-0.29
Depression T1	-0.02	0.01	-1.20	0.23	-0.34
PTSD T1	0.13	0.09	1.48	0.14	0.41
Demographic Risk	0.11	0.23	0.46	0.65	0.06
Latent Maltreatment Class	0.96**	0.34	2.87	0.00	0.38
Additional Maltreatments	0.13	0.13	0.96	0.34	0.13

Note. $^{+=}$ p <.10. * = p < .05. ** = p < .01. β refers to the standardized regression coefficient. 95% CIL and 95% CIU refer to the lower and upper limits of the confidence intervals. Additional Maltreatments = number of additional maltreatments; T1 = 6-weeks; T2 = 4-months.

Table 26
Correlations between Disorganization and Maltreatment Class, Demographic Risk, and Psychological Symptoms

	Disorganization
Disorganization	1.00
Additional Maltreatments	0.14
Demographic Risk	-0.00
PTSD T1	0.09
PTSD T2	0.03
Depression T1	0.01
Depression T2	0.20*

Note. + = $p<.10$. * = $p<.05$. ** = $p<.01$. Correlations between other study variables can be found in Table 9. Additional Maltreatments = number of additional maltreatments; T1 = 6-weeks; T2 = 4 months.

Table 27
Structural Equation Model Results for Pathways to Continuous Disorganization Scores

	Estimate	S.E.	Est./S.E.	β	95% CIL	95% CIU
Depression T1 ON						
Demographic Risk	-3.31	3.88	-0.85	-0.08	-9.39	3.33
Latent Maltreatment Class	-9.77+	5.99	-1.63	-0.17	-19.80	-0.03
Additional Maltreatments	6.12**	2.48	2.47	0.29	2.15	10.23
PTSD T1 ON						
Demographic Risk	-0.92+	0.54	-1.69	-0.16	-1.75	0.04
Latent Maltreatment Class	-1.34+	0.82	-1.64	-0.17	-2.69	0.01
Additional Maltreatments	1.27**	0.37	3.41	0.43	0.65	1.87
Depression T2 ON						
Depression T1	0.65**	0.08	8.67	0.77	0.53	0.78
Demographic Risk	2.23	2.73	0.82	0.06	-2.11	6.81
Latent Maltreatment Class	6.23+	3.60	1.73	0.13	0.16	11.98
Additional Maltreatments	-0.45	1.61	0.28	-0.03	-3.14	2.14
PTSD T2 ON						
PTSD T1	0.59**	0.12	4.92	0.58	0.40	0.80
Demographic Risk	0.79	0.53	1.50	0.14	-0.05	1.69
Latent Maltreatment Class	0.44	0.67	0.67	0.06	-0.58	1.60
Additional Maltreatments	0.07	0.32	0.23	0.02	-0.44	0.58
Disorganization ON						
Depression T2	0.05+	0.03	1.71	0.43	0.00	0.11
PTSD T2	-0.23*	0.10	-2.32	-0.31	-0.38	-0.07
Depression T1	-0.02	0.04	-0.64	-0.22	-0.09	0.03
PTSD T1	0.21	0.18	1.20	0.29	-0.06	0.52
Demographic Risk	-0.03	0.45	-0.06	-0.01	-0.72	0.77
Latent Maltreatment Class	2.19**	0.62	3.52	0.37	1.19	3.23
Additional Maltreatments	0.26	0.28	0.93	0.12	-0.21	0.72

Note. $^{+=}$ p <.10. * = p < .05. ** = p < .01. β refers to the standardized regression coefficient. 95% CIL and 95% CIU refer to the lower and upper limits of the confidence intervals. Additional Maltreatments = number of additional maltreatments; T1 = 6-weeks; T2 = 4-months.

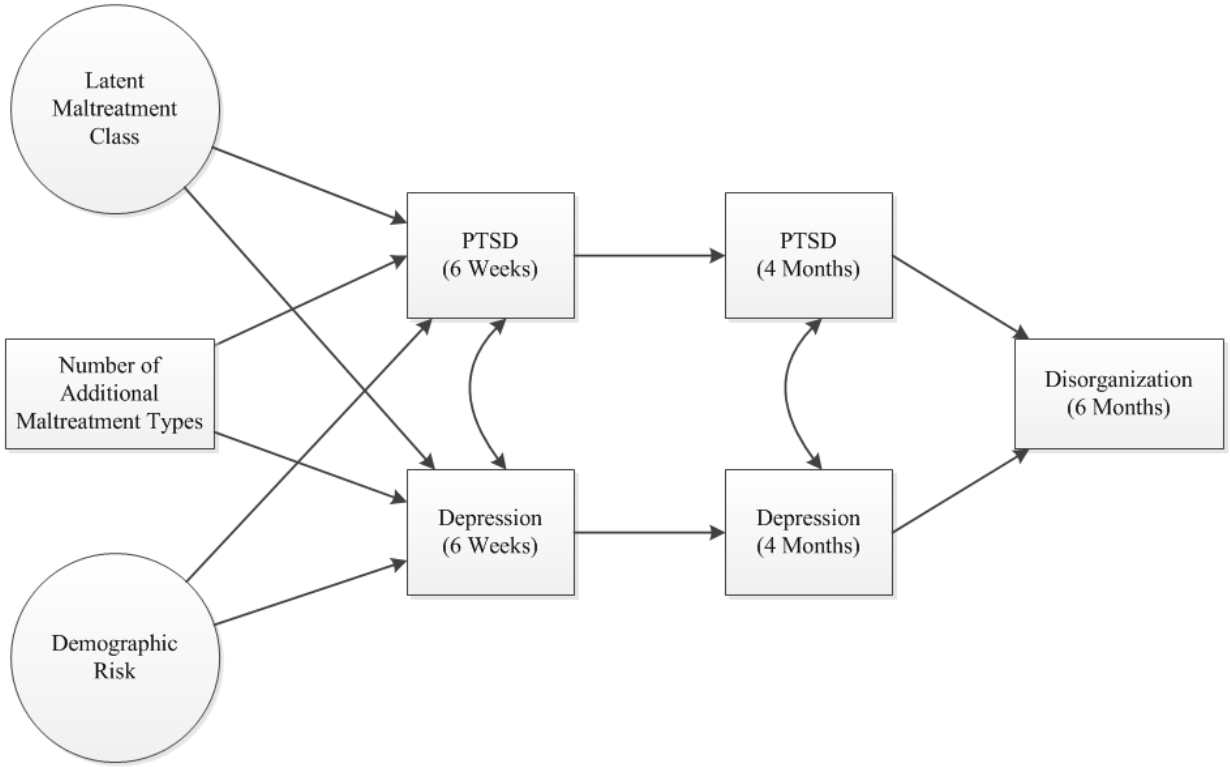

Figure 1. Conceptual model of pathways to disorganization.

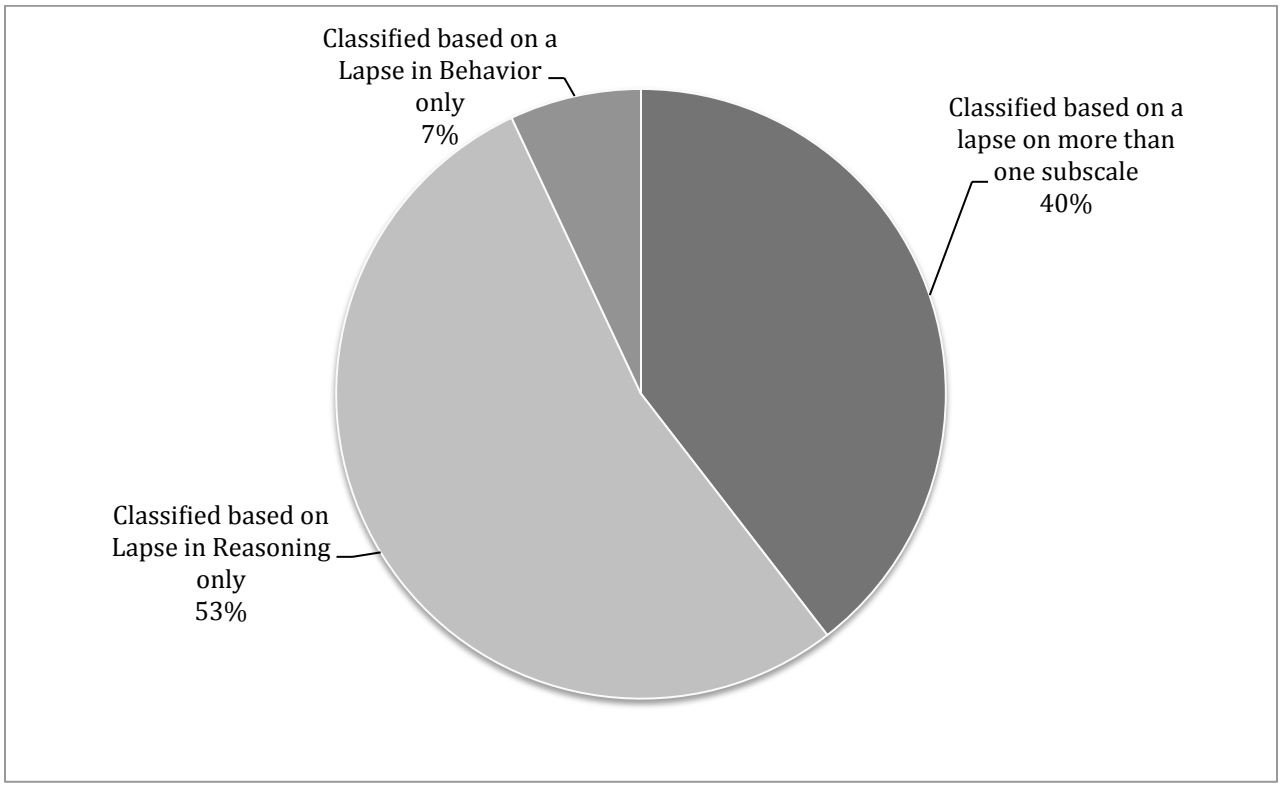

Figure 2. Graphical representation of the frequencies of subscales that resulted in participants disorganized classification.

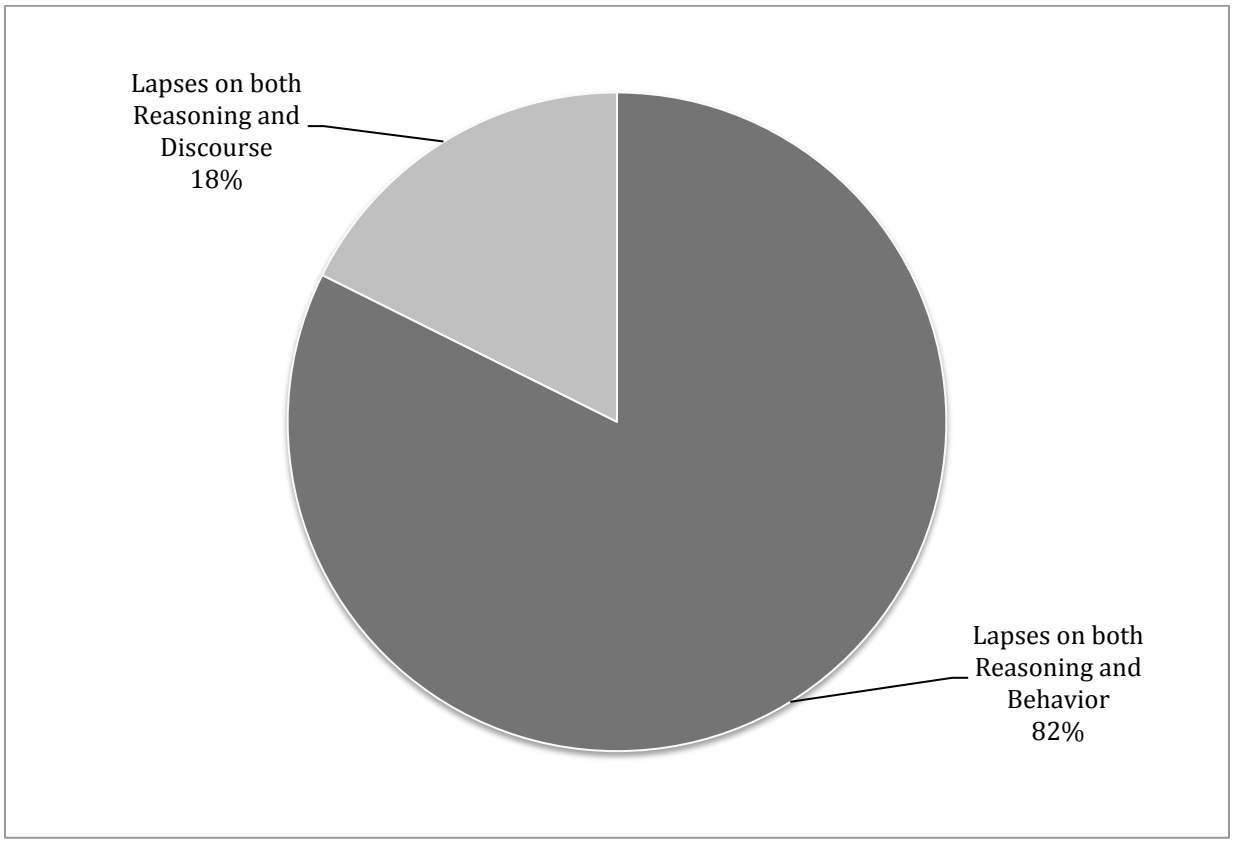

Figure 3. Graphical representation of the frequency of co-occurring subscales within the group classified as disorganized based on scores on two subscales. (from Figure 1).

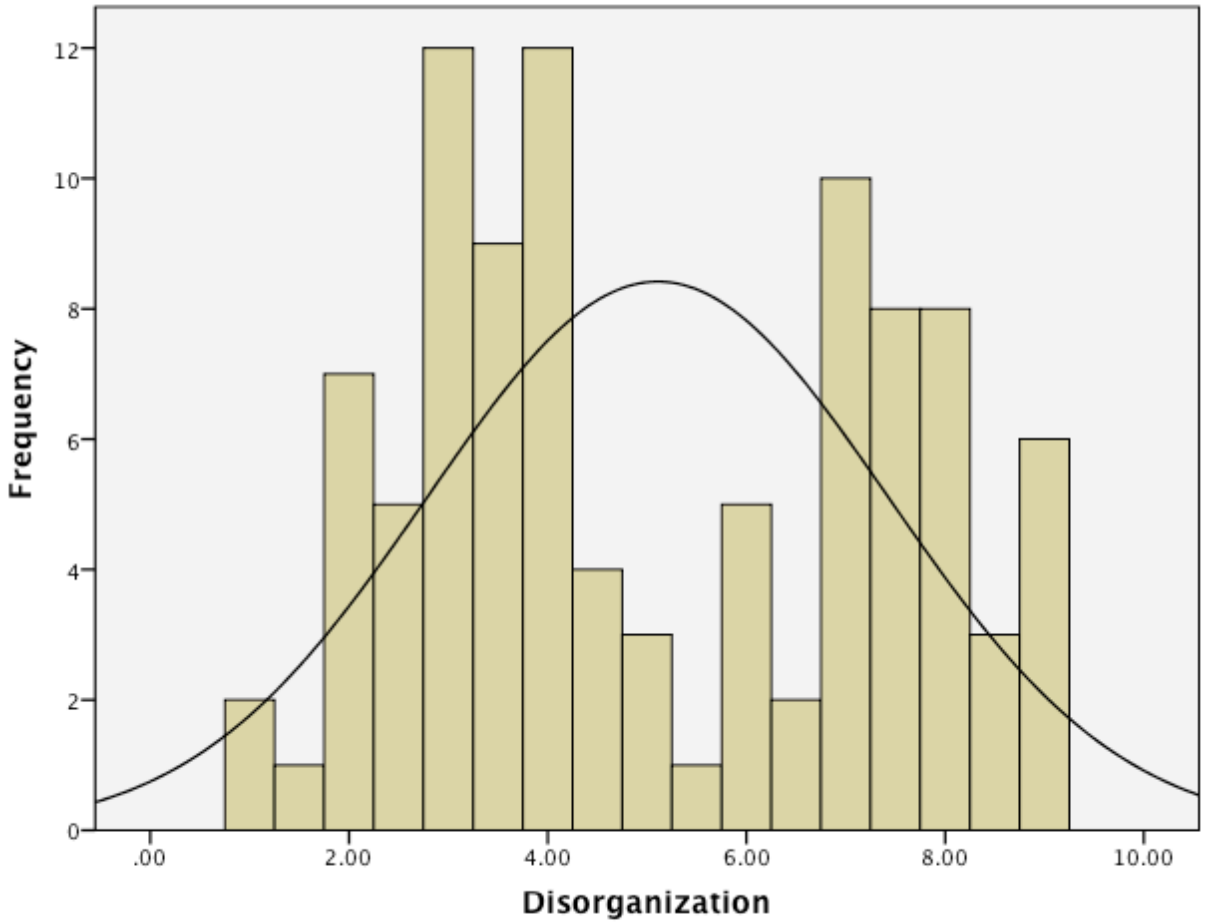

Figure 4. Histogram of untransformed continuous disorganization scores.
Note. N=98

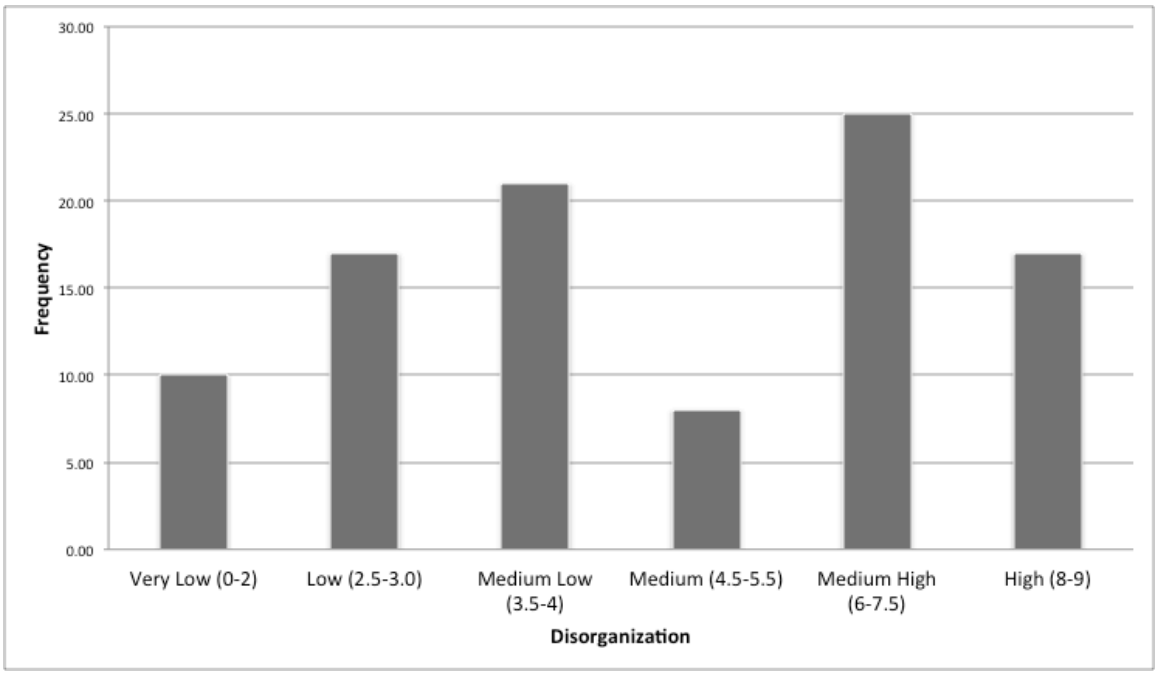

Figure 5. Graphical representation of frequency of continuous disorganization scores

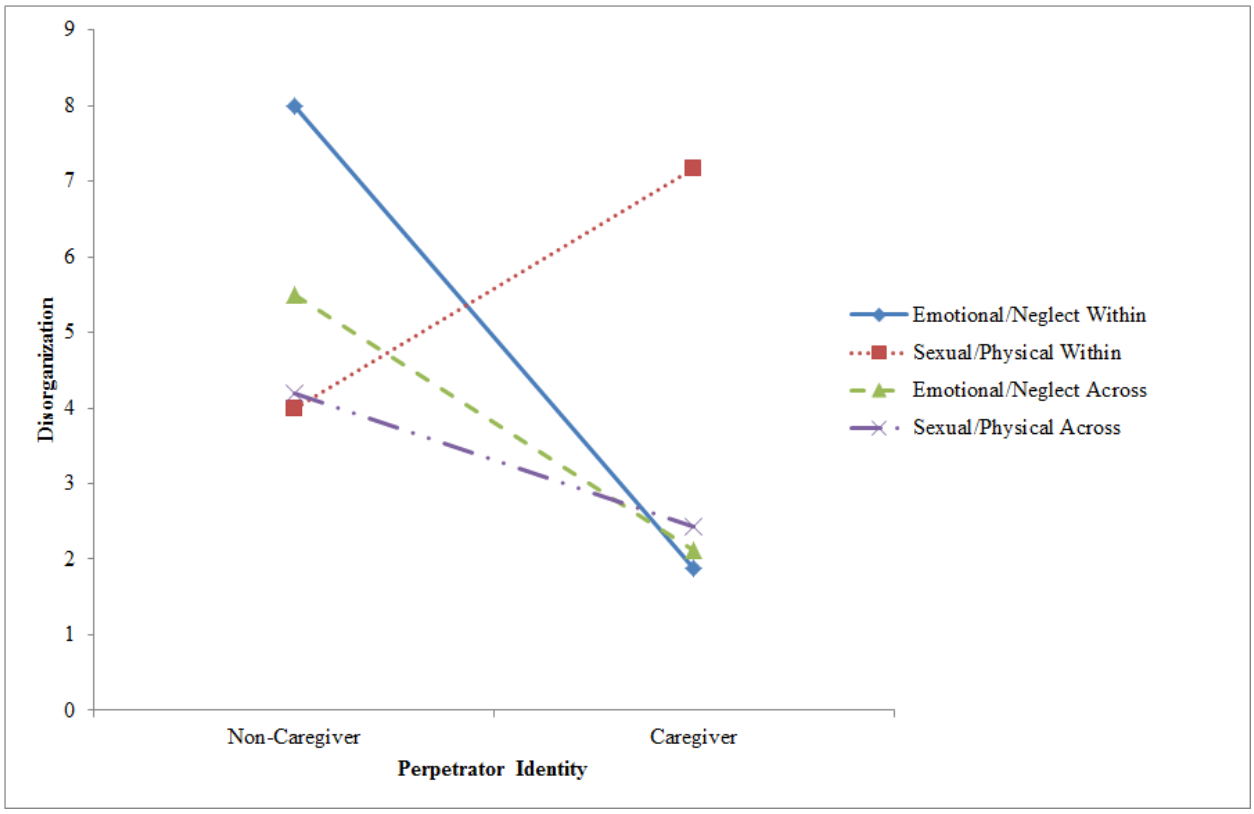

Figure 6. Simple slopes for maltreatment type of the regression of disorganization on perpetrator identity and developmental period.

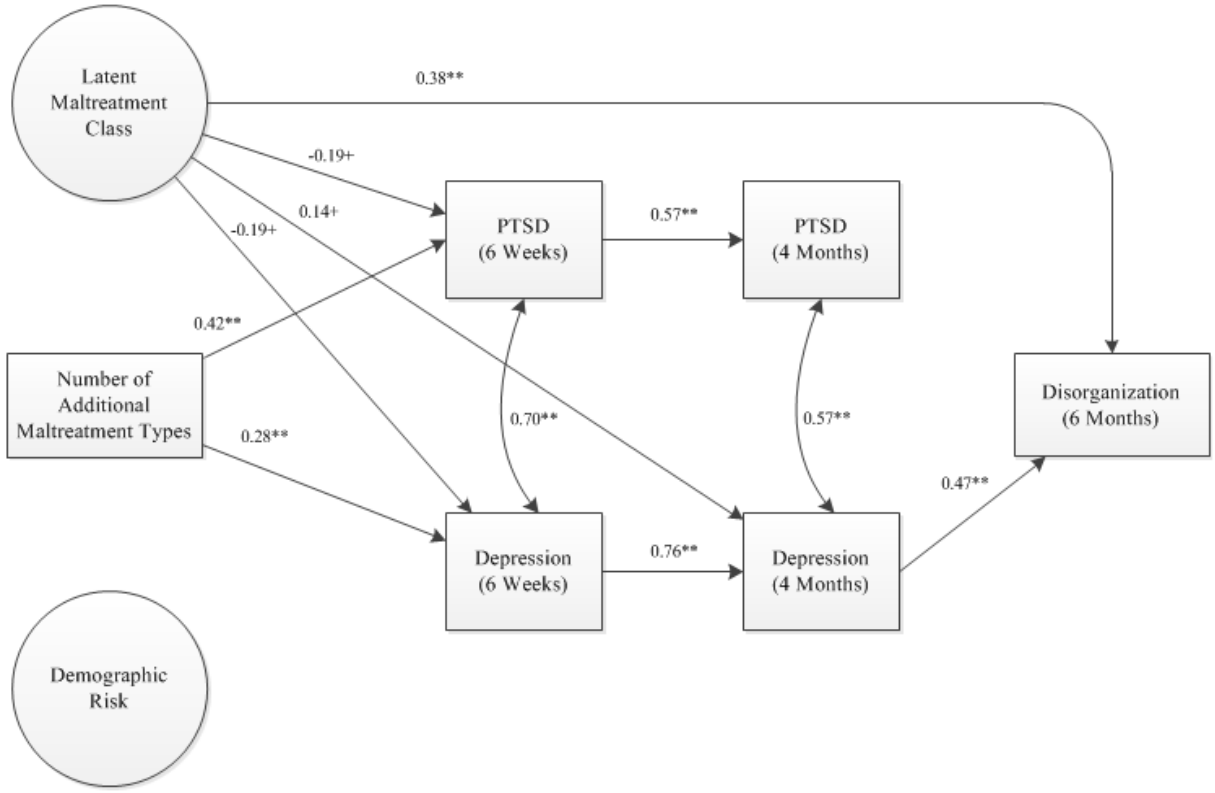

Figure 7. Pathways to disorganized classification
Note. + = p<.10. * = p<.05. ** = p<.01.

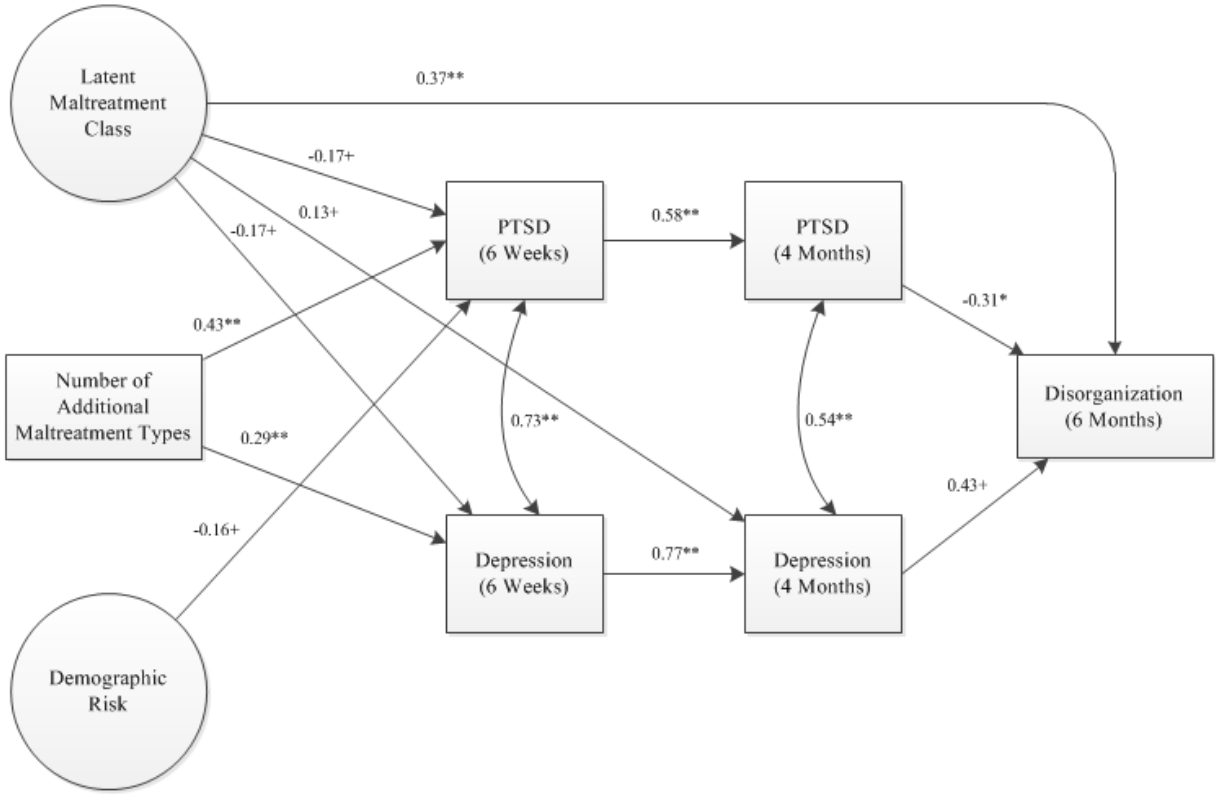

Figure 8. Pathways to continuous disorganization scores
*Note. + = p<.10. * = p<.05. ** = p<.01.*

APPENDIX B: MEASURES

Demographics

Demographics Survey for Home Visit

I would like to start out the visit by asking you a few questions about you and your baby's everyday lives.

1. Who lives in the baby's household? Circle and fill #

	Age: (# of years)	**Sex: Female=1 /Male=2**
1= Mother		
2= Father		
3= Grandparent		
4= Half/Stepsibling		
5= Aunt/Uncle		
6=Cousin		
7=Great Grandparent		
8=other extended family who?		
9=non-family member who?		

4. What is your current marital status? (check all that apply) NOTES:

____ (1)Married
____ (2)Living with birth father
____ (3)Living with partner (not biological father)
____ (4)Divorced
____ (5)Separated
____ (6)Widowed
____ (7)Never Married

5. If you are in a relationship, how long have you and your partner been together?

a)_____ Years **b**) _____ Months
Total # of months:_____

6. Mother's Age: _____
7. Father's Age: _____

8. Is your baby cared for out of your home on a regular basis?

_____(0) No
_____(1) childcare center (Total hrs/week: _____)
_____(2) child goes to someone else's home ("child care home") (non-relative)
(Total hrs/week: _____)
_____(3) private provider comes to my own home (Total hrs/week: _____)
_____(4)other (describe: _____)

9. Who does childcare during a typical week in your home?

_____(1) Self Total hrs/week: _____

_____(2) Biological Father	Total hrs/week: _____
_____(3) Grandparent	Total hrs/week: _____
_____(4) Half/Stepsibling	Total hrs/week: _____
_____(5) Aunt/Uncle	Total hrs/week: _____
_____(6) Cousin	Total hrs/week: _____
_____(7) Great Grandparent	Total hrs/week: _____
_____(8) other extended family	Total hrs/week: _____
_____(9) non-family member	Total hrs/week: _____

10. Do you own or rent your current dwelling?

___ (1)Own
___ (2)Rent
___ (3) Section 8 or Public Housing
___ (4) Other (Describe: _____)

11. In what way do you receive your income? **NOTES:**

(1) ___ Employment
(2) ___ Unemployment compensation
(3) ___ Disability (workman's compensation)
(4) ___ Social Security or SSI
(5) ___ Aid to Families with Dependent Children (AFDC)
(6) ___ Child support or alimony
(7) ___ Food stamps
(8) ___ Medicaid or Medicare
(9) ___ WIC or Women Infants and Children
(10) ___ Investments or Rent

Answer the following questions for the current job for both parents. If either parent is unemployed, ask about her/his usual job held prior to unemployment.

12. How many jobs do you currently hold? ___ (#jobs) 14. ___ (1)Employed full-time ___ (2)Employed part-time ___ (3)Staying home with the baby full-time	13. How many jobs does the baby's father currently hold? ___ (# jobs) 15. ___ (1)Employed full-time ___ (2)Employed part-time ___ (3)Staying home with the baby full-time
16. If unemployed, are you currently: ___ (1)Unable to work ___ (2)Looking for employment ___ (3)On temporary leave of absence	17. If unemployed, is baby's father currently: ___ (1)Unable to work ___ (2)Looking for employment ___ (3)On temporary leave of absence
18. Mom: What is your usual job? (be very specific) Hollingshead score: _____	19. Dad: What is baby's father's usual job? (be very specific) Hollingshead score: _____
Main activities of mother's job?	Main activities of father's job?
Do you supervise people at work? Yes____ No _____ if yes, how many? _____	Does father supervise people at work? Yes_____ No _____ if yes, how many? _____
What industry is this in? (prompt: What does the employer sell or make?)	What industry is this in? (prompt: What does the employer sell or make?)

Think of all the income from people who live in your home. Include sources of income listed above, such as employment, child support, AFDC, SSI. I am going to give you a list of incomes. Please indicate the number of the category you fall into.

20. Which category on this list is closest to your household income last year?

Category (1-21)_____

Answer the following questions for EDUCATIONAL background for both parents.

21. How much education have you (mother) gotten?	22. How much education has the baby's father gotten?
___(1)Less than HS degree	___(1)Less than HS degree
___(2)HS degree or GED	___(2)HS degree or GED
___(3)Some College	___(3)Some College
___(4)AA Degree	___(4)AA Degree
___(5)Voc. or Technical Degree	___(5)Voc. or Technical Degree
___(6)Bachelor's Degree	___(6)Bachelor's Degree
___(7)Master's Degree	___(7)Master's Degree
___(8)Doctoral Degrees	___(8)Doctoral Degrees
23. Are you currently in school? ____ (0)No ____ (1)Yes	24. Is the baby's father currently in school? ____ (0)No ____ (1)Yes
25. If yes: ___ (1)High school ___ (2)GED program ___ (3)Community college (AA) ___ (4)Vocational/technical program ___ (5)Job training program (specify: _____) ___ (6)College (BA, BS program) ___ (7)Graduate school	26. If yes: ___ (1)High school ___ (2)GED program ___ (3)Community college (AA) ___ (4)Vocational/technical program ___ (5)Job training program (specify: _____) ___ (6)College (BA, BS program) ___ (7)Graduate school

Race or Ethnicity for Mother and BABY:

27. Mother's race or ethnicity:	**28. Baby's** race or ethnicity:
___ (1)Caucasian	___ (1)Caucasian
___ (2)African-American	___ (2)African-American
___ (3)Latino	___ (3)Latino
___ (4)Native American	___ (4)Native American
___ (5)Asian-Pacific	___ (5)Asian-Pacific
___ (6)Bi-racial:(_____)	___ (6)Bi-racial:(_____)
___ (7)Other:(_____)	___ (7)Other:(_____)

Maternal & Baby Health Questionnaire

In the next section we would like to ask you about your and your baby's health. Let's start with some questions about your health.

1. Are you currently healthy? Y__(0)
   - High blood pressure __ (1)
   - Diabetes __ (2)
   - Asthma __ (3)
   - Other:_____ __ (4)

2. Are you taking any medications now since baby was born? N___(0)
   - if yes: what? _____ dose? _____
   - _____ _____
   - _____ _____
   - _____ _____

3. Are you seeing any medical professional (PCP, nurse, therapist)
___Y (1) ____N(0)

4.What is your current height :____ (inch) 5. Current weight:_____ (lbs)

6. Do you recall your pre-pregnancy weight? ____ (lbs)

8. How old were you when you had your first period?_____ (yrs)

9. Are you currently pregnant? Y___ (1) N____(0)

10. Were you sick during this last pregnancy? N___ (0)
   - if yes:
   - High blood pressure __ (1)
   - Diabetes __ (2)
   - Asthma __ (3)
   - Eclampsia __ (4)
   - Accident/Injury __ (5)
   - Infections (e.g., UTI) __ (6)
   - Other:_____ __ (7)

11. Have you been taking medications in pregnancy? N____ (0)
   - if yes: what? _____ dose? _____
   - _____ _____
   - _____ _____
   - _____ _____

Opiates (1)	Vitamins (8)
Benzos (2)	Herbs (9)
SSRI (3)	
Mood stab (4)	
BCP (5)	
Norepi (6)	
Steroids (7)	

12. Complications at birth? Y___(1) N____(0) what?____

13. Baby premature? Y___ (1) N____(0) weeks?_____

14. Baby in NICU? Y___ (1) N____(0) 12. How long? _____ days_ or ____weeks
_____ (total # days)

15. Baby born with medical condition or disability? Y___ (1) N____(0)

16. Baby current medical problem? N___(0)
if yes: related to:

stomach/digestive system (e.g., colic)	___ (1)
breathing/respiratory system (e.g., wheezing)	___ (2)
brain/nervous system (e.g., seizures)	___ (3)
frequent ear infections (>2)	___ (4)
other:_____	___ (5)
developmental problem	___ (6)
ever hospitalized (except NICU)	___ (7)

17. How long was your baby in the hospital? _____ Weeks ____ Days
_____(tot#days)

18. How old was your baby at this time? _____ Months _____ week(s)

_____(tot#weeks)

19. Is your baby on any medications currently? N___ (0)

if yes: what? _____ dose? _____
_____ _____
_____ _____
_____ _____

20.Are you concerned about your baby's condition? Y___(1) N____(0)

21. Are you finding your baby's condition to be a problem or upsetting? Y___(1) N____(0)

22. Does it affect how you feel about being a parent? Y___(1) N____(0)

. Measurement of Baby:

23.length:_____ (inch) 24.weight: _____(lbs) (RA DONE)

Question # 20
Demographics-Income scale
Please indicate which number assigned to an income range best describes you.

1. **Less than $5,000**
2. **Between $5,000-9,999**
3. **Between $10,000-14,999**
4. **Between $15,000-19,999**
5. **Between $20,000-24,999**
6. **Between $25,000-29,999**
7. **Between $30,000-34,999**
8. **Between $35,000-39,999**
9. **Between $40,000-44,999**
10. **Between $45,000-49,999**
11. **Between $50,000-54,999**
12. **Between $55,000-59,999**
13. **Between $60,000-64,999**
14. **Between $65,000-69,999**
15. **Between $70,000-74,999**
16. **Between $75,000-79,999**
17. **Between $80,000-84,999**
18. **Between $85,000-89,999**
19. **Between $90,000-94,999**
20. **Between $95,000-99,999**
21. **More than $100,000**

SEVERITY AND AGE

Trauma History Checklist:	*AGE:*			*Number of times this happened:*		
Before age 16:	0-5yrs	6-11yrs	12-16yrs	Just once	A few times	Many times
Were you ever emotionally abused or neglected, for example, being frequently shamed, embarrassed, ignored, or repeatedly told that you were 'no good'?						
Were you ever physically neglected, for example, not fed, not properly clothed, or left to take care of yourself when you were too young or ill?						
Were you ever abused or physically attacked by someone you knew, for example, a parent, boyfriend, or husband? By physically attacked, we mean hit, slapped, choked, burned, or beat up.						
Were you ever touched or made to touch someone else in a sexual way because they forced or manipulated you in some way or threatened to harm you if you didn't?						
Did you ever have oral, anal, or genital sex when you didn't want to because someone forced or manipulated you in some way or threatened to harm you if you didn't?						

Was this by:

1 = Mom
2 = Dad
3 = Step-Mom
4 = Step-Dad
5 = Mom's Boyfriend
6 = Brother
7 = Sister
8 = Other Relative
9 = Neighbor
10 = Teacher
11 = Stranger
12 = Other___

And before age 16:	Yes	No
Did you ever see violence between family members, for example, hitting, kicking, slapping or punching?		
Were you ever bothered or harassed by sexual remarks, jokes, or demands for sexual favors by someone at school or outside your home, for example, another student on the school bus, a teacher or co-worker?		

PTSD TAB:

Now I'm going to ask you some more questions about moods and feelings. Please tell me if you have had any of these experiences since the last interview. These are just Yes or No type questions; however, if you answer "yes" I might ask you what you think the experience is about.

	No	**Is that about birth?**	**Is that about the new traumatic event?**	**…or (and) about your childhood experience?**	**Combination** Of 1,2,3,5	**…or something else?**
1. You had trouble concentrating or keeping your mind on what you were doing, even when you tried to concentrate?	**0**	**1**	**2**	**3**	**4**	**5**
2. You lost interest in activities which usually meant a lot to you?	**0**	**1**	**2**	**3**	**4**	**5**
3. You felt you had to stay on guard much of the time?	**0**	**1**	**2**	**3**	**4**	**5**
4. You deliberately tried very hard not to think about something that had happened to you?	**0**	**1**	**2**	**3**	**4**	**5**
5. You had difficulty falling asleep or staying asleep?	**0**	**1**	**2**	**3**	**4**	**5**
6. You stopped caring about activities in your life that used to be important to you?	**0**	**1**	**2**	**3**	**4**	**5**
7. Unexpected noises startled you more than usual?	**0**	**1**	**2**	**3**	**4**	**5**
8. You kept having unpleasant memories or seeing them in your mind?	**0**	**1**	**2**	**3**	**4**	**5**
9. You had repeated bad dreams or nightmares?	**0**	**1**	**2**	**3**	**4**	**5**
10. You went out of your way to avoid certain places or activities which might remind you of something that happened to you in the past?	**0**	**1**	**2**	**3**	**4**	**5**

11. You deliberately tried to avoid having feelings about something that happened to you in the past?	**0**	**1**	**2**	**3**	**4**	**5**
12. You felt cut off from other people or found it difficult to feel close to other people?	**0**	**1**	**2**	**3**	**4**	**5**
13. It seemed you could not feel things anymore or that you had much less emotion than you used to?	**0**	**1**	**2**	**3**	**4**	**5**
14. You found yourself suddenly feeling very anxious, fearful, or panicky?	**0**	**1**	**2**	**3**	**4**	**5**
15. Little things bothered you a lot or could make you very angry?	**0**	**1**	**2**	**3**	**4**	**5**
16. Disturbing memories kept coming into your mind whether you wanted to think of them or not?	**0**	**1**	**2**	**3**	**4**	**5**
17. You felt a lot worse when you were in a situation that reminded you of something that had happened to you in the past?	**0**	**1**	**2**	**3**	**4**	**5**
18. You found yourself reacting physically to things that remind you of something that had happened to you in the past?	**0**	**1**	**2**	**3**	**4**	**5**
19. The way you think about or plan for the future was changed by something that happened to you in the past?	**0**	**1**	**2**	**3**	**4**	**5**

20. Have you ever had a "flashback"--that is, have you ever had an experience in which you imagined that something that happened in the past was happening all over again?	**0**	**1**	**2**	**3**	**4**	**5**
Q. PTSD. B. **We've been talking about distressing experiences that you may have had. Have you ever felt that there were parts of any such experiences that you couldn't remember?**	**0**	**1**	**2**	**3**	**4**	**5**
	No	**Is that about birth?**	**Is that about the new traumatic event?**	**…or (and) about your childhood experience?**	**Combination**	**…or something else?**

Did any of those traumatic events or the emotions cause...

A. "Problems with your schoolwork/job? (IF NEEDED, CONTINUE**: including bad grades, having to drop out of school, getting in trouble with your teachers, or having to work harder to make the same grades?/ including not being able to do as well as you could before, having to quit, trouble with your boss or coworkers, or being fired?)"**

1. YES
0. NO
Leave blank. NOT APPLICABLE/DK/REFUSAL/NOT ASCERTAINED

B."Problems with your physical health? (IF NEEDED, CONTINUE**: including backaches, headaches…)**

1. YES
0. NO
Leave blank. NOT APPLICABLE/DK/REFUSAL/NOT ASCERTAINED

C. "Problems with family members or friends? (IF NEEDED, CONTINUE**:...including getting into more arguments or fights you did before, not feeling you could trust them as much, or not feeling as close to them as you did before?)"**

1. YES
0. NO
Leave blank. NOT APPLICABLE/DK/REFUSAL/NOT ASCERTAINED

[PTSD.E]
a) How distressing have all these symptoms and problems been to you?

1. VERY DISTRESSING
2. A LITTLE DISTRESSING
3. NOT AT ALL DISTRESSING

Leave blank. [not sure]/[not applicable since did not have any]

PSYCHOSIS: **Now, I would like to ask you a question about your past mental health record.**

1. **Have you ever been told that you suffer an illness called schizophrenia or bipolar disorder?** YES(1) NO(0) (if yes, which? _____)

PDSS TAB:

The next portion of the interview provides statements about how a mother may be feeling after the birth of her baby. The options for this questionnaire are Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree and I can repeat those options for you at any time.

Please tell me how much you agree or disagree with the following statements...

	During the past 2 weeks,	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	You had trouble sleeping even when your baby was asleep.	1	2	3	4	5
2.	You got anxious over even the littlest things that concerned your baby.	1	2	3	4	5
3.	You felt like your emotions were on a roller coaster.	1	2	3	4	5
4.	You felt like you were loosing your mind.	1	2	3	4	5
5.	You were afraid that you would never be your normal self again.	1	2	3	4	5
6.	You felt like you were not the mother you wanted to be	1	2	3	4	5
7.	You thought that death seemed like the only way out of this living nightmare.	1	2	3	4	5
8.	You lost your appetite.	1	2	3	4	5
9.	You felt really overwhelmed.	1	2	3	4	5
10.	You were scared that you would never be happy again.	1	2	3	4	5
11.	You could not concentrate on anything.	1	2	3	4	5
12.	You felt as though you had become a stranger to yourself.	1	2	3	4	5
13.	You felt like so many mothers were better than you.	1	2	3	4	5
14.	You started thinking that you would be better off dead.	1	2	3	4	5
15.	You woke up on your own in the middle of the night and had trouble getting back to sleep.	1	2	3	4	5

16.	**You felt like you were jumping out of your skin.**	1	2	3	4	5
17.	**You cried a lot for no real reason**	1	2	3	4	5
18.	**You thought you were going crazy.**	1	2	3	4	5
19.	**You did not know who you were anymore.**	1	2	3	4	5
20.	**You felt guilty because you could not feel as much love for your baby as you should.**	1	2	3	4	5
21.	**You wanted to hurt yourself.**	1	2	3	4	5
22.	**You tossed and turned for a long time at night trying to fall asleep.**	1	2	3	4	5
23.	**You felt all alone.**	1	2	3	4	5
24.	**You have been very irritable.**	1	2	3	4	5
25.	**You had a difficult time making even a simple decision**	1	2	3	4	5
26.	**You felt like you were not normal.**	1	2	3	4	5
27.	**You felt like you had to hide what you were thinking or feeling toward the baby.**	1	2	3	4	5
28.	**You felt that your baby would be better off without you.**	1	2	3	4	5
29.	**You knew you should eat but you could not.**	1	2	3	4	5
30.	**You felt like you had to keep moving or pacing.**	1	2	3	4	5
31.	**You felt full of anger ready to explode.**	1	2	3	4	5
32.	**You had difficulty focusing on a task.**	1	2	3	4	5
33.	**You did not feel real.**	1	2	3	4	5
34.	**You felt like a failure as a mother.**	1	2	3	4	5
35.	**You just wanted to leave this world.**	1	2	3	4	5
	During the past 2 weeks,	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**

[IF Person marked 4 or 5 on shaded items, we must respond to this disclosure of risk for self-harm. Insert these questions: (If not, skip to CD-RISK TAB)

Are you getting help with those feelings about wanting to end your life?

Yes: **"Who is helping you?"** Write answer verbatim: _____(checkbox in coding)

No and Yes:

The principal investigator, Dr. Muzik, is interested in speaking with women like you who have answered the above questions like you. She may be able to connect you with specific help if you wish so. Could I get your phone number and the best time to call you? (Get a number or two and a best time.)

Number: _____ Best time: _____

Let me give you her phone number too so you can call Maria in case that's better for you or in case she has trouble reaching you. Her office phone is 734.846.8027. Can I give you her pager too? Dial 734.936-06266, enter pager #13575, and enter your dial back number. Postpartum depression is a really serious problem, so I want to give you some hot line numbers too, okay?

Ann Arbor (UM Psych emergency service) = 734 936-5900

Detroit Receiving Hospital crisis line: 313-745-3546

[Then page Maria to let her know.]

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ABSTRACT

PREDICTORS OF DISORGANIZED STATES OF MIND WITH REGARD TO TRAUMA IN MOTHERS WITH MALTREATMENT HISTORIES

by

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Disorganization is understood as a lack of cognitive and emotional integration of traumatic experiences (Main & Morgan, 1996). Disorganized states of mind appear to be particularly salient to parenting outcomes and represent an important psychological construct for understanding the consequences of child maltreatment and may be particularly important during the postpartum period (Ballen, et al., 2010; Lyons-Ruth & Jacobvitz, 2008; Kanotra, et al., 2007; Kaufman & Zigler, 1987).

Characteristics of child maltreatment and demographic characteristics have been linked to both disorganization and psychological symptoms of PTSD and depression (Bailey, et al., 2007; Banyard, et al., 2001; Davis, et al., 2008; Riggs & Jacobvitz, 2002; Simon, et al., 2008). A small body of research supports the theory that symptoms of PTSD are linked to and possibly maintain disorganized states of mind (Liotti, 1992; Fearon & Mansell, 2001; Simon et al., 2008; Stovall-McClough & Cloitre, 2006). Experiencing depression has also been linked to disorganization, however this relationship is less well understood (Borelli, et al., 2010; Ivarsson, et al., 2010). The current study assessed the presence and frequency of indicators of disorganization and

disorganized classification. This study also investigated associations between maltreatment characteristics, demographic risk, and the persistence of psychological symptoms (PTSD and depression) and disorganized states of mind with respect to maltreatment in a sample of new mothers. Indicators of disorganization were common and demonstrated adequate variability. 43% of the sample was classified as disorganized. Experiencing sexual abuse by a non-caregiver within one developmental period was associated with being classified as disorganized as well as the severity of disorganization scores. Demographic characteristics were not related to disorganization. Results also revealed that the persistence of symptoms of depression, but not PTSD, during the postpartum period predicted disorganized classification. The current study provides important information about the frequency of disorganized states of mind as well as links to maltreatment characteristics and symptoms of depression during the postpartum period.

AUTOBIOGRAPHICAL STATEMENT

The author was born in Traverse City, Michigan, November 16, 1983. She graduated from Pioneer High School, Ann Arbor, Michigan in June 2001. She graduated with her Bachelor of Arts in Psychology from DePaul University, Chicago, Illinois in June 2005. She graduated with her Master of Arts in Clinical Psychology from Wayne State University, Detroit, Michigan, in May 2010. She will graduate with her Doctorate of Philosophy in Clinical Psychology from Wayne State University, Detroit, Michigan, in December 2012.