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Relationship of Age of Onset and Other Dimensions of Trauma to Dissociation in an Adult Clinical Population

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Relationship of Age of Onset and Other Dimensions of Trauma to Dissociation in an Adult Clinical Population

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Dedication

This thesis is dedicated to my father and mother, Hishem and Elizabeth Abbas, whose belief in me has carried me through this seemingly monumental task.

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Abstract

This study examined four dimensions of trauma and how they affected levels of dissociation in male and female adult outpatients. These dimensions are age of onset, multiple trauma, chronicity, and recency. Two hundred forty-five adult outpatients at the University of Tennessee Psychological Clinic were administered the Dissociative Experiences Scale (DES) and the Traumatic Experiences Checklist (TEC) as part of the routine intake procedure. Of those individuals, 177 patients reported trauma and were included in the final study sample. Individuals reporting trauma had significantly higher dissociation than those who did not report trauma. All four dimensions of trauma were found to be significantly correlated with dissociation. In addition, multiple trauma was found to be the most important factor contributing to the participants' dissociation. An interaction was also found between age of subject at time of assessment and recency. Finally, gender moderated the effect of age of onset on dissociation scores. Ultimately multiple trauma, despite age of onset, chronicity, or recency, has the most weight when conceptualizing the complex relationship between dissociation and trauma.

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Chapter I: Introduction

The present study investigates how various dimensions of trauma, such as age of onset, multiple trauma, chronicity, and recency affect dissociation in adults. The study utilizes a clinical sample of male and female adults in an outpatient setting who have a variety of diagnoses and endorse having at least one of six subtypes of trauma. The study samples a large, diverse population, a broad age range, and a detailed investigation of trauma dimensions. In this way, the study will extend current literature on the relationship between trauma and dissociation. Specifically, the present study plans to examine the following questions: Do individuals who report trauma have higher dissociation than those who do not report trauma? Will earlier age of onset of trauma be associated with greater dissociative symptomatology? Is a higher number of traumatic episodes correlated with greater dissociation? Is more chronic trauma associated with increased dissociation? Is recency of trauma related to dissociation scores? What is the relative importance of each of these trauma dimensions to dissociation? Does age of subject at time of assessment or gender have an effect on dissociation?

In the introduction, first, dissociation and trauma will be defined. Following this, the relationship between dissociation and trauma, which includes theory and the relevant empirical literature, will be reviewed. Each dimension of trauma will be discussed in turn, focusing on studies that are similar to the proposed research. Next, the various gaps in the literature will be detailed and how the current study plans to address some of them will be outlined. Subsequently, the methods of the present study will be explained including the procedures, participants, and measures utilized. The hypotheses will be detailed, and analyses proposed with which to test them.

Definitions of Dissociation and Trauma

The American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision, DSM-IV-TR (2000) defines dissociation as "a disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment. The disturbance may be sudden or gradual, transient or chronic" (p. 822). Pathological dissociation may be assessed categorically in terms of presence/absence of a dissociative disorder (e.g. Dissociative Identity Disorder (DID) or Depersonalization Disorder), or dissociation may be assessed along a continuous scale that ranges between normative and pathological dissociation. One self-report measure of the continuum of dissociation is the Dissociative Experiences Scale, DES, (Bernstein & Putnam, 1986) used in the current study. Normative dissociation can be illustrated by the phenomenon of "highway amnesia," in which an individual may "zone out" while driving on the interstate and drive past their destination. Psychopathological dissociation, on the other hand, develops when the individual's functioning becomes significantly impaired, leading to, for example, lapses in memory concerning significant personal information too extensive to be attributed to normal forgetfulness, or the existence of semi-independent personality states which alternate with one another in controlling behavior. Psychopathological dissociation, in contrast to normative dissociation, is a "threat to optimal development of self" (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997, p.856).

Freud (1917) posited that trauma "shatters the foundations of [a patient's life, as a result of which] he abandons all interest in the present and future and remains permanently absorbed in mental concentration on the past" (p. 276). *DSM-IV-TR* (2000) defines trauma as an event a "person experiences, witnesses, or is confronted with . . . that involves actual or threatened death or serious injury, or a threat to the physical integrity of self or others; and the person's response

involves intense fear, helplessness, or horror" (p. 467). The current study focuses on traumatic experiences that fall into six subtypes: emotional neglect, emotional abuse, physical abuse, sexual harassment, sexual abuse, and miscellaneous traumatic episodes (e.g. loss of a family member, witnessing others undergo trauma, or serious bodily injury).

Relationship of Dissociation and Trauma

When normal development occurs, a child passes through several developmental stages, completing them in turn. Through this process a child begins to form a personality and a consolidated sense of self. However, when a child suffers a trauma, he may not be able to successfully negotiate through this myriad of developmental tasks and stages. This inability to complete these tasks and integrate experiences may cause a disruption in the formation of the self (Putnam, 1989). Sroufe and Fleeson (1986) assert that formation of the self does not happen automatically and emerges from completion of prior stage-salient developmental tasks.

For instance, when trauma occurs it may cause a disruption in the child's ability to consolidate a sense of self across behavioral states. It also may deter the child from attaining control over or mastery of the modulation of states. Additionally, the trauma generates a more pronounced separation between behavioral states, thereby creating dissociative states, or compartments, for the overwhelming memories and emotions aroused by the trauma (Putnam, 1989). Intense emotional arousal may interfere with the information processing and storage of traumatic memory due to being encoded differently than non-traumatic memory (van der Kolk, 1994). That is, an absence of memory for the traumatic event may occur, while contrarily, vivid intrusive thoughts, images, and sensations of the trauma may instead be present, both of which are manifestations of dissociated states. Therefore, each trauma may become a threat to an individual's self-coherence and self-continuity. Self-coherence, an individual's integration in the

present, and self-continuity, the individual's integrity throughout one's life, are vital in order for one to feel as though he is a "whole" person (van der Kolk, McFarlane, & Weisaeth, 1996).

For the present study, conceptually this means an individual who has suffered a trauma, especially at an early age, may have higher dissociation due to the difficulty, or even, the inability of the individual's self to develop and integrate normatively as a result of the traumatic episode. Furthermore, an individual who has experienced multiple traumatic episodes or chronic trauma may exhibit higher dissociation in response to the increasing disintegration and fragmentation of the self upon the occurrence of each trauma or in response to prolonged exposure. Thus, the individual's transition between behavioral states may be ruptured. This causes behavioral states to remain discrete, abrupt, and unpredictable across contextual events (Putnam, 1989). Also, when faced with the effects of recent trauma, younger individuals are more likely to be vulnerable than older individuals to dissociate. This could be due to the older individuals having a more consolidated and stable sense of self than younger individuals. Finally, females' dissociation scores may be more affected by age of onset of trauma than males' dissociation scores because females have more dissociation than males (Bryant & Harvey, 2003; Fullerton et al., 2001; Olff, Langeland, Draijer, & Gersons, 2007) and are three times more likely to suffer from sexual abuse as a child than males (Putnam, 2003; Tolin & Foa, 2006) and it has been shown that child sexual abuse is associated with dissociation (Macfie, Cicchetti, & Toth, 2001a; Macfie, Cicchetti, & Toth, 2001b).

Theory

Spiegel (1986) theorized that dissociation is a defense mechanism activated in response to the overwhelming pain and helplessness produced by trauma. He claims that dissociation is at

the other end of a continuum that begins with association, and that it is different than other defense mechanisms because rather than protecting an individual from unconscious desires and drives, it shields them from immediate traumatic experiences. However, fragmentation of one's sense of self may then occur. Furthermore, dissociation may become part of the individual's emotion regulation strategy and be reactivated when exposed to future stress or even perceived stress (Spiegel, 1986).

Empirical findings: Relationship of dissociation and trauma

When performing a study on dissociation and trauma there are two ways of gathering data: retrospective self-report or prospective longitudinal study. Especially when investigating dissociation and trauma, using a retrospective self-report measure is problematic due to the very nature of possible memory loss for trauma associated with dissociation. Also, the salience of the trauma for individuals currently seeking treatment may obscure the individual's experience of dissociation. In contrast, prospective longitudinal studies diminish the impact that the salience of the memory has on the individual's report. For instance, Macfie et al. (2001a) assessed dissociation in 45 maltreated (sexual abuse, physical abuse, and neglect) and 33 nonmaltreated preschool-aged children by using a children's narrative story-stem completion task and the Child Dissociative Checklist (Putnam, Helmers, & Trickett, 1993). The maltreated children followed a trajectory, with dissociation increasing over time during the preschool years. Additionally, Ogawa et al. (1997) conducted a longitudinal study over 19 years with 168 children who, due to poverty and single mother status, were considered high risk for poor developmental outcomes. In their initial analysis, they found that age of onset of trauma predicted dissociation. Moreover, in both of these longitudinal studies, the experience of trauma was assessed objectively using

coding of records, e.g., Department of Children's Services, rather than depending on participants' retrospective self-report.

Nevertheless, numerous retrospective self-report studies have also consistently provided empirical support for an association between trauma and dissociation in adults. For instance, Lipschitz, Kaplan, Sorkenn, Chorney, and Asnis (1996) used the DES and the Traumatic Events Questionnaire (TEQ) to determine the relationship of both childhood and adult-onset trauma on dissociation in 114 psychiatric outpatients. They found that even when adult abuse experiences were controlled for, childhood abuse experiences were related to dissociation. Furthermore, individuals with combined childhood and adult-onset abuse scored significantly higher on the DES than did individuals with no history of abuse, childhood abuse only, or adult-onset abuse only. These findings support the empirical research (Kirby, Chu, & Dill, 1993; Quimby & Putnam, 1991; Saxe et al, 1993) that dissociative experiences are extremely common in psychiatric patients and are correlated with childhood abuse experiences. Lipschitz et al.'s (1996) study used retrospective self-report measures in an adult clinical outpatient sample. The present study plans to utilize a similar methodology and population in order to replicate and extend their findings.

In more recent retrospective studies that examine adult outpatients, those individuals who reported trauma during childhood demonstrated increased dissociation (Johnson, Pike, & Chard, 2001; Watson, Chilton, Fairchild, & Whewell, 2006). Retrospective studies that utilize adult inpatient populations also find that a significant correlation occurs between abuse and degree of dissociative symptomatology (Kirby et al., 1993; Shearer, 1994). These findings have also been demonstrated in retrospective studies that use a non-clinical sample (Egeland & Susman-Stillman, 1996; Irwin, 1994).

On the other hand, there are retrospective self-report studies using clinical samples that have found no significant degree of dissociation associated with trauma. Hardt (2003) asked 16 male veterans to complete seven questionnaires to evaluate trauma and its effect on dissociation. They hypothesized that childhood trauma will be associated with greater dissociation than adulthood trauma. This hypothesis was not supported.

Some empirical literature utilizing retrospective methodology and a non-clinical sample concluded that trauma had no significant effect on DES scores (Repasky, 2001). Finally, not all empirical studies support a direct relationship between trauma and dissociation. For example, Nash, Hulsey, Sexton, Harralson, and Lambert (1993) examined patterns of adult psychopathology associated with a history of childhood sexual abuse in a sample of 105 women, split into four categories: abused-clinical; abused-nonclinical; nonabused-clinical; nonabused-nonclinical. Nash et al. (1993) found that childhood sexual abuse was associated with increased dissociation; however, when family pathology was controlled for, significance was no longer obtained. In summary, there are discrepant findings regarding trauma and its relationship to dissociation.

Empirical findings: Dissociation and dimensions of trauma

The link between childhood trauma and adult psychopathology has become increasingly acknowledged in the empirical literature (Epstein, Saunders, & Kilpatrick, 1997; Hardt, 2003; Repasky, 2001; Zlotnick et al., 1994). Traumatic experience may overwhelm mental capacities, disturb affective experience and expression, and interfere with the capacity for symbolization and fantasy, thus contributing to the breakdown of meaning (PDM Task Force, 2006). The present study will focus on four dimensions of trauma and their effect on dissociation: age of

onset of trauma, multiple trauma, chronicity, and recency. It is important to assess these dimensions independently of each other in order to unpack exactly what about trauma is associated with dissociation in addition to what is already established in the empirical literature (Kirby et al., 1993; Lipschitz et al., 1996; Watson et al., 2006). However, the nature of these factors and more specifically, how they impact an individual's dissociation still needs considerable attention and investigation.

Age of onset. It seems the earlier the age of onset of trauma the more disintegrated the self becomes, or indeed never fully integrates, and continues to increasingly fragment over time. Thus, the individuality and identity of a person that normally develops during the preschool years instead becomes more fragmented for some maltreated children who experienced physical abuse, sexual abuse, or neglect rather than becoming more integrated as for nonmaltreated children (Macfie et al., 2001a; Macfie et al., 2001b). According to the DSM-IV field trials that investigate the criteria for Posttraumatic Stress Disorder, PTSD, individuals who were traumatized at an early age tended to have problems in all five symptom clusters of PTSD, one of which is alterations in attention and consciousness with dissociation being a subcategory. The results of the field trials confirm that trauma occurring in the first decade of life has the most profound impact. Thus, depending on an individual's stage of development, a traumatic experience can be more or less overwhelming (Kilpatrick et al., 1994). In the present study, age of onset is operationalized as the actual chronological age in years of the first occurrence of trauma in the individual's lifetime.

The hypothesis that experiences of trauma in childhood produce dissociative symptoms and increased dissociation in adulthood was confirmed in individuals with borderline personality disorder, BPD (Watson et al., 2006). Furthermore, in female clinical populations, significant

correlations have been found between age of onset of abuse and degree of dissociative symptomatology (Johnson et al., 2001; Kirby et al., 1993). Dissociative symptomatology has also been associated with trauma in adulthood. Survivors of various types of adult-onset trauma, such as combat exposure, have been found to exhibit increased dissociative symptomatology as measured by the DES (Bremner et al., 1992). Furthermore, refugees who survived killing fields were found to have scored high on the DES (Carlson & Rosser-Hogan, 1991). Another consequence of trauma occurring in adulthood is the development of Depersonalization Disorder which frequently occurs in individuals who are victims of torture or abusive confinement as adults (Dor-Shav, 1978; Putnam, 1985).

However, not all empirical research supports a relationship between age of onset of trauma and increased dissociation. Zlotnick et al. (1994) investigated age of onset in females who had sexual abuse histories in order to see how abuse affects the extent of dissociative symptoms as an adult. They found age of onset of abuse did not significantly relate to dissociative symptomatology. Repasky (2001) used an undergraduate sample to investigate the DES scores of individuals with a history of abuse onset before age 10, after age 10, or reporting no history of abuse at all. No significant difference was found for the DES scores of those individuals in any of the above groups. Similarly, Swartz (2002) determined that age of onset of trauma had no significant effect on the DES scores of the participants.

A trend in the literature suggests that it is the cumulative effect of adult trauma and childhood trauma that generates the highest dissociation (Lipschitz et al., 1996). Similarly, Shearer (1994) investigated how child-onset vs. adult-onset trauma affected dissociation and found that physical and sexual abuse in childhood combined with adult sexual abuse and measures of behavioral dyscontrol predicted an increase of dissociation. In summary, trauma

occurring in adulthood may magnify the deleterious effects of childhood trauma on dissociation. The present study plans to investigate age of onset of trauma and its effect on dissociation in an adult outpatient sample. See Table 1 for studies that found a relationship between age of onset of trauma and degree of dissociation. See Table 2 for studies that found no relationship between age of onset of trauma and degree of dissociation.

Multiple trauma. Multiple trauma is the number of discrete traumatic episodes an individual has suffered. However, it is highly implausible to measure this precisely especially when keeping in mind individuals who, for example, were victims of physical abuse as a child. Nevertheless, some researchers examined multiple trauma and revictimization. Lipschitz et al. (1996) asserted that those who experienced multiple childhood traumas and/or who were revictimized as an adult experienced the most dissociation. Furthermore, Hagenaars, Fisch, and van Minnen (2011) sampled adult outpatients and measured dimensions of trauma such as multiple trauma. Hagenaars et al. (2011) found that outpatients who reported multiple trauma had greater dissociation than patients who endorsed only a single trauma. Dominguez, Cohen, and Brom (2004) used a sample of adult outpatients age 18-65 seeking mental health treatment at an urban mental health clinic in Jerusalem. They found that elevated dissociation scores were correlated with the increased prevalence of traumatic episodes in an individual's lifetime. Hagenaars et al. (2011) found that multiple trauma was the most important trauma dimension contributing to higher dissociation. However, Hardt's (2003) hypothesis that individuals with multiple trauma would have increased dissociation was not supported. There are some gaps of information in the above mentioned studies. For instance, Dominguez et al. (2004) did not investigate age of onset of trauma and how that trauma dimension affects dissociation. None of the above mentioned studies investigated chronicity or recency. Furthermore, Hardt (2003) only

sampled a small number of male veterans from age 36 to 76 yrs. old. Lipschitz et al. (1996) reported studying adults but did not indicate an age range of their sample nor a mean or standard deviation. The present study is designed to address these gaps in the literature by sampling a less circumscribed population, having a larger sample size including males and females with a broad age range and a more comprehensive investigation of dimensions of trauma, including age of onset, chronicity, and recency in addition to multiple trauma. This study design may enable the research community to infer more accurate and generalizable conclusions.

Chronicity. Of the studies reviewed in the above sections, only three included chronicity of trauma. However, all three had varying operational definitions of chronic trauma. The current study intends to operationalize chronicity of trauma as the total duration of years trauma is experienced in an individual's lifetime. Kirby et al. (1993) concluded that more chronic abuse is associated with greater dissociation. On the other hand, Shearer (1994) employed a more comprehensive investigation of types of trauma (physical/ sexual/ emotional abuse, neglect, adult physical/ sexual assault, witnessing violence) and asserted that chronic trauma throughout an individual's lifetime contributed to higher dissociation in adults. Indeed, Ogawa et al. (1997) found that chronicity was moderately correlated with symptoms of dissociation. However, due to the concern about overlap of chronicity and age of onset, Ogawa et al. (1997) partialed out chronicity from the relationship of age of onset and dissociation. Following this analysis, there was no longer a significant association between age of onset and dissociation. Their results were based on a longitudinal study that began before birth and was completed when the subjects were 18-19 years of age. This eliminated their ability to study trauma chronicity into adulthood. The present study intends to eliminate these methodological issues by sampling male and female adult outpatients and analyzing six subtypes of trauma similar to Shearer (1994).

Recency. Trauma recency can be operationalized as time between *last* trauma and assessment (Khamis, 2008; Kravic, 1987; Palesh & Dalenberg, 2006; Radnitz et al., 1998), or between *worst* trauma and assessment (Ganzel, Casey, Glover, Voss, & Temple, 2007). Numerous studies that investigated trauma and dissociation, including all of the empirical literature discussed in previous sections, did not acknowledge recency of trauma as a possible criterion in the search for a link between trauma and the development of dissociation. Nonetheless, there have been findings in the empirical literature on the effect of trauma recency in relation to several other types of psychological symptoms and disorders that have some relevance to dissociation. Several found that recency of trauma predicted increased incidence (Ganzel et al., 2007; Radnitz et al., 1998) and severity of PTSD (Ganzel et al., 2007; Kilpatrick et al., 1989; Radnitz et al., 1998); more acute stress reactions (Kravic, 1987); more depression (Khamis, 2008); and less behavioral problems in children (Kravic, 1987). However, other researchers found that recency had no significant effect on diagnosis of PTSD or anxiety (Khamis, 2008); nor recovered memory (Palesh et al., 2006). In other words, they asserted time elapsed since trauma does not improve psychological health nor do the symptoms of PTSD diminish over time. Although the above mentioned studies examined recency, the current study plans to examine trauma recency as it directly relates to dissociative symptomatology. It will operationalize trauma recency as number of years between last trauma and assessment. Thus, the study plans to investigate if the independent variables, age of onset of trauma, multiple trauma, chronicity, and recency, are significantly associated with dissociation and the degree of which each accounts for a unique amount of variance.

Current hypotheses

In prior empirical research on the relationship between trauma and dissociation there were methodological issues which may hinder the ability to generalize findings to broader populations. The methodological issues that recur in the dissociation and trauma literature include samples of highly specific populations (e.g. women, specific disorders, types of trauma) and absence of information regarding certain dimensions of trauma (e.g. age of onset, multiple trauma, chronic trauma, recency). The present study addresses some of the methodological issues in the previously discussed research by utilizing a clinical sample of male and female outpatients who have heterogeneous traumatic histories and a variety of diagnoses. In addition to age of onset of trauma, the present study plans to account for impact of other dimensions of trauma, such as multiple trauma, chronicity, and recency, in relation to dissociation.

In the current study eight hypotheses are examined based on review of the empirical literature. The first hypothesis is that individuals who report trauma will have significantly higher dissociation scores than individuals who do not report trauma. Second, earlier age of onset of trauma will be associated with greater dissociative symptomatology. Third, it is hypothesized that multiple trauma will be correlated with greater dissociation. Fourth, it is hypothesized that more chronic trauma will be related to increased dissociation. Fifth, it is hypothesized that greater recency of trauma will be associated with higher dissociative scores. Sixth, in order to clarify the relative importance that each variable has on dissociation, trauma dimensions for which there were significant associations with dissociation will be entered simultaneously into a regression analysis. Seventh, it is hypothesized that the age of the subject at the time of assessment will moderate the effect of recency on dissociation scores such that a younger individual is more vulnerable than an older individual to dissociate when faced with the effects

of recent trauma. Finally, it is hypothesized that gender will moderate the effect of age of onset of trauma on dissociation scores such that dissociation scores will be greater for women with lower age of onset as compared to women with higher age of onset.

Chapter II: Method

Procedures

The University of Tennessee Psychological Clinic is a training facility for non-licensed Clinical Psychology graduate students. It serves a low socioeconomic status population who are uninsured by utilizing a sliding fee schedule. All adults seeking individual psychotherapy or a psychological evaluation at the University of Tennessee Psychological Clinic from January 2010 to March 2011 were administered several questionnaires as part of the clinic's routine intake procedure. The questionnaires used in this study include the Dissociative Experiences Scale (DES) and the Traumatic Experiences Checklist (TEC).

Participants

Questionnaires were administered to male and female adult outpatients (N = 245). Those who refused to complete the questionnaires (n = 5) and those who filled them out incompletely or incorrectly (n = 30) were excluded. Of the adults who completed all the questionnaires correctly (n = 210), 14% reported no trauma (n = 33) and were excluded. Therefore, a total of 28% (n = 68) of the individuals were excluded from the final study sample (N = 177). The final study sample was comprised of adults who completed the questionnaires and reported trauma.

For the demographics of all outpatients who received questionnaires in the clinic intake packet (N = 245) and for the number of participants who responded to each demographic question, please see Table 3. All demographic information is voluntary and as such all demographic questions were not responded to by each participant. Furthermore, the trauma (N = 177) versus no trauma (n = 33) groups were compared and analyzed for significant differences. Demographics are as follows for the individuals in the final sample size (N = 177). The sample of adults ranged in age from 18 to 65 (M = 29.67, SD = 11.03), 44% were males and 56% were

females. For participants reporting no trauma (n = 33), the sample of adults ranged in age from 18 to 51 (M = 25.97, SD = 9.43), 49% were males and 51% were females. See Table 4 for demographics of participants reporting trauma versus no trauma.

Measures

Dissociative Experiences Scale (DES)

The Dissociative Experiences Scale (Bernstein et al., 1986) is a self-report measure assessing dissociation on a continuum. There are 28 items that describe a variety of dissociative experiences that the participant responds to using a scale ranging from 0%-100%. The total score is calculated by summing all the individual item scores and dividing by 28. The range for the overall score is 0-100. A score of 20-30 is considered a high score on the DES. The DES is used as a screening instrument, not as a diagnostic tool. There are three subscales: amnesia, depersonalization - derealization, and absorption. However, this study will be focusing only on the overall score. Some sample items include, "Some people find that they have no memory for some important events in their lives (for example, a wedding or a graduation);" "Some people have the experience that other people, objects, and the world around them are not real;" and "Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip" (Bernstein et al., 1986). This measure has been used in many studies and has been validated through meta-analysis (van Ijzendoorn & Schuengel, 1996). In one study, the DES had a test-retest reliability of r = 0.93 (Dubester & Braun, 1995; van Ijzendoorn et al., 1996). It has high internal consistency, with Cronbach's alphas of .96 and .97 obtained during test sessions 1 and 2, respectively. It has a construct validity of, F (2,154) = 32.03, $p \leq .001$, which was obtained by utilizing a univariate repeated-

measures analysis of variance and demonstrating the differences among the three subscale scores of the DES. The three factors are consistently reported and the items load highly on these subscales when factor analysis is performed (Dubester et al., 1995). There is support for convergent and predictive validity, specifically with traumatic experiences and the diagnosis of dissociative disorders (van Ijzendoorn et al., 1996). Dissociation scores for the participants in the final study sample (N = 177) ranged from 0 to 63.21 (M = 12.95, SD = 10.93). The DES scores for the final study sample had high internal consistency, with a Cronbach's alpha of .91. Dissociation scores for the participants who did not report trauma ranged from 0.36 to 16.79 (M = 4.60, SD = 3.93).

The Traumatic Experiences Checklist (TEC)

The Traumatic Experiences Checklist (Nijenhuis, van der Hart, & Vanderlinden, 1996) is a 25 item self-report measure inquiring about traumatic experiences that fall into six subtypes: emotional neglect, emotional abuse, physical abuse, sexual harassment, sexual abuse, and miscellaneous traumatic episodes (e.g. loss of a family member, witnessing others undergo trauma, or serious bodily injury). The checklist asks subjects to indicate age of onset of trauma and duration, as well as severity of impact, and the relationship of the victim to the perpetrator, for example family members, extended family, or others (Dorahy, Lewis, Millar, & Gee, 2003). For the purpose of this study, all subtypes of trauma will be used. However, they will be collapsed into an overarching category of "trauma." In one study, the test-retest reliability was r = 0.91 and the concurrent validity between the TEC and the Stressful Life Events Screening Questionnaire (SLESQ) was r = .77, suggesting the two measures tap into similar constructs. It has high internal consistency, with Cronbach's alphas of .86 and .90 at times 1 and 2,

respectively (Nijenhuis, van der Hart, & Kruger, 2002).

Assessment of trauma dimensions

Age of onset. In this study, age of onset of trauma refers to the age in years when the first trauma is reported to have occurred. This was determined by the participant indicating an age and/ or age range next to each trauma they experienced. Then, during data collection and entry, the investigator recorded the youngest age indicated by each participant on the TEC. The age of onset of trauma of the participants in this study ranged from birth to age 62 (M = 7.63, SD = 8.06).

Multiple trauma. The multiple trauma variable is operationalized as the number of discrete traumatic episodes. This was determined by the participant indicating an age and/ or age range next to each trauma they experienced. This could be the number of traumatic episodes within a subtype or across different subtypes. For instance, if an individual stated they witnessed violence at age 5 and 10, and had a car accident at age 16, the investigator would record this entry as three traumatic episodes. The precise measurement of number of discrete traumatic episodes is difficult, and in many ways, implausible, especially in the case of a participant reporting physical abuse over a continuous time period. Nevertheless, for this study if a participant stated that he experienced physical abuse from age 3-7, the number of traumatic episodes for that individual would be one. The number of traumatic episodes of the participants in this study ranged from 1 to 22 (M = 5.93, SD = 4.25).

Chronicity. Chronic trauma is operationalized as the overall reported chronological duration of trauma. That is, the total number of years trauma occurred from initial traumatic episode (age of onset) to the last episode within the individual's lifetime. This was determined by

the participant indicating an age and/ or age range next to each trauma they experienced. For example, if an individual reported having physical abuse from the ages of 13 to18 and then a serious bodily injury at age 27, the individual's chronicity score is six. That is, the initial trauma corresponds to five years and the second trauma is recorded as one year. A minimum of one year is assigned to each individual who reports even a single trauma. For instance, if the participant reports having a car accident at age 15, his chronicity score will be one. This is an attempt to quantify a single event in which the duration is unknown and to remain consistent with the selected unit of time (i.e. year) as previously indicated when calculating the chronicity score. Finally, if an individual reports several traumas during the same age, that year is only counted once. That is, if a participant reports being sexually assaulted at age 23 and having a threat to life from another person at age 23, that participant's chronicity score is one. The total chronological duration of trauma of participants in this study ranged from 1 to 55 years (M = 13.86, SD = 11.83).

Recency. The final variable, recency, is calculated by subtracting the age in years of the last reported trauma from the age in years at the time of assessment. The time since the last trauma is called the recency score. This was determined by the participant indicating an age and/ or age range next to each trauma they experienced. An example of this is if an individual reports her last trauma as occurring at age 45 and she is 62 years old at the time of assessment, that participant's recency score is 17. Also, if the participant reports that a trauma is occurring at the time of assessment, his recency score is zero. The recency of trauma score of participants in this study ranged from 0 to 36 years ago (M = 4.29, SD = 6.68). See Table 5 for descriptive statistics of trauma dimensions.

Chapter III: Results

Preliminary Analyses

Many of the trauma dimensions were significantly correlated with each other. For instance, age of onset was significantly correlated with multiple trauma, $r = -.38$, $p < .001$, and chronicity, $r = -.58$, $p < .001$. Multiple trauma was significantly correlated with chronicity, $r = .51$, $p < .001$, and with recency, $r = -.22$, $p < .01$. Chronicity was significantly associated with recency, $r = -.27$, $p < .001$. In fact, the only dimensions that were not significantly associated with each other were age of onset and recency, $r = .01$, $p > .05$. See Table 6 for correlations.

Analysis of Hypotheses

The first hypothesis was tested by performing an independent t-test analysis. The group mean for individuals who endorsed trauma was significantly greater than the mean for the group who did not endorse trauma, $t\ (208) = 4.33$, $p < .001$. The next four hypotheses were tested by performing bivariate two-tailed Pearson's correlation analyses. As hypothesized, earlier age of onset of trauma correlated significantly with greater dissociative symptomatology, $r = -.22$, $p < .01$. The third hypothesis was also supported. That is, having multiple trauma was significantly correlated with greater dissociation, $r = .29$, $p < .001$. Additionally, more chronic trauma was significantly associated with increased dissociation, $r = .28$, $p < .001$. Moreover, the fifth hypothesis that more recent trauma was significantly related to higher dissociation was also supported, $r = -.17$, $p < .05$. See Table 7 for correlations and their significance.

The sixth hypothesis was tested by utilizing a simultaneous multiple regression where each of the significant independent variables from the above hypotheses was placed in a model in order to determine the unique contribution of each dimension of trauma on dissociation. The overall model was significant, $F\ (4, 172) = 5.78$, $p < .001$) and accounted for 12% (10%

adjusted) of variance in dissociation scores. In univariate analyses, multiple trauma had the largest effect on dissociation scores, $\beta = .18$, $t\ (172) = 2.07$, $p < .05$. The other dimensions (age of onset, chronicity, and recency) were not significant. See Table 8 for coefficients and *t*-test significance.

The seventh hypothesis was tested by centering the recency and age of subject variables prior to conducting a hierarchical multiple regression analysis. An interaction term was created by computing the product of the age of subject variable and the recency variable in order to test whether age of subject moderated the effect of recency on dissociation scores. In the first step, the overall model was not significant, $\Delta R^2 = .03$, $F\ (2, 174) = 2.81$, $p > .05$ and accounted for 3% (2% adjusted) of variance in dissociation scores. Recency was significant, $\beta = -.19$, $t\ (174) = 2.35$, $p < .05$, while age of subject was not significant, $\beta = .04$, $t\ (174) = 0.52$, $p > .05$. In the second step, the overall model was significant, $\Delta R^2 = .04$, $F\ (3, 173) = 4.31$, $p < .01$ and accounted for 7% (5% adjusted) of variance in dissociation scores. Recency was significant, $\beta = -.32$, $t\ (173) = 3.45$, $p \leq .001$, while age of subject was not significant, $\beta = .01$, $t\ (173) = 0.08$, $p > .05$. However, as hypothesized, in a significant interaction, age of subject moderated the effect of recency on dissociation scores, $\beta = .25$, $t\ (173) = 2.67$, $p < .01$ such that when faced with the effects of recent trauma, a younger individual was more susceptible to dissociation than an older individual. See Table 9 and Figure 1 for details of the interaction effect.

The eighth, and last, hypothesis was tested by centering the age of onset variable prior to conducting a hierarchical multiple regression analysis. An interaction term was created by computing the product of the gender variable and the age of onset variable in order to test whether gender moderated the effect of age of onset of trauma on dissociation scores. In the first step, the overall model was significant, $\Delta R^2 = .05$, $F\ (2, 174) = 4.30$, $p < .05$ and accounted for

5% (4% adjusted) of variance in dissociation scores. Age of onset was significant, $\beta = -.21$, t (174) = 2.89, $p < .01$, while gender was not significant, $\beta = .03$, t (174) = 0.39, $p > .05$. In the second step, the overall model was significant, $\Delta R^2 = .03$, F (3, 173) = 4.50, $p < .01$ and accounted for 7% (6% adjusted) of variance in dissociation scores. Age of onset was not significant, $\beta = .02$, t (173) = 0.18, $p > .05$, nor was gender, $\beta = .03$, t (173) = 0.44, $p > .05$. However, as hypothesized, in a significant interaction, gender moderated the effect of age of onset of trauma on dissociation scores, $\beta = -.29$, t (173) = 2.18, $p < .05$ such that men's dissociation scores tended to remain relatively flat despite age of onset; while, women's dissociation scores appeared much greater for women with lower age of onset as compared to women with higher age of onset. See Table 10 and Figure 2 for details of the interaction effect.

Chapter IV: Discussion

The present study extended current literature on the relationship between trauma and dissociation. It utilized a clinical sample of male and female adults in an outpatient setting who had a variety of diagnoses and endorsed having experienced at least one of six subtypes of trauma. This study examined a large, diverse population, with a broad age range. Furthermore, the emphasis on investigating several trauma dimensions in detail, including age of onset, multiple trauma, chronicity, and recency, also contributed to the empirical literature about trauma's impact on dissociative symptomatology. This is in contrast to the previously mentioned studies which did not examine recency as it directly affected dissociation. In fact, none of the previously mentioned studies investigated each of the four trauma dimensions, age of onset, multiple trauma, chronicity, and recency, simultaneously in one study. Also, several of the studies had limited samples, such as college undergraduates only, inpatients only, females only, a small sample size, or individuals with a specific psychiatric disorder, i.e. borderline personality disorder. Additionally, many studies focused on specific types of trauma, i.e. child abuse. The present study attempted to extend the current literature and fill those gaps of information by addressing each of those methodological issues in turn, while investigating the following hypotheses.

The first hypothesis that individuals who report trauma have higher dissociation than individuals who do not report dissociation was supported. The second hypothesis that earlier age of onset was associated with higher dissociation was supported. Thus, in this study if a participant reported trauma at an early age, his dissociation score was likely to be significantly higher than a participant endorsing trauma at a later age. In accordance with the theories of many scholars in the dissociation and trauma field, such as Putnam and Spiegel, when trauma occurs

during an early period in development, it may cause a disruption in one's ability to consolidate a sense of self across behavioral states (Putnam, 1989) and can cause fragmentation in one's sense of self (Spiegel, 1986).

The third hypothesis that multiple trauma was associated with higher dissociation was also supported. Individuals in this study who had a greater number of traumatic episodes were more likely to have significantly higher dissociation than those individuals who reported fewer traumatic episodes. This is aligned with Spiegel's theory that dissociation may become part of an individual's emotion regulation strategy and be reactivated when the individual is exposed to future trauma, stress or even perceived stress (Spiegel, 1986). The effect of multiple trauma on the present study's participants' dissociation scores further evidenced van der Kolk et al.'s (1996) belief that each trauma may be a threat to an individual's self-coherence and self-continuity.

The fourth hypothesis that chronic trauma was associated with higher dissociation was supported. Individuals in this study who endorsed more overall chronological years of trauma were more likely to have significantly higher dissociation than those individuals who suffered fewer years of trauma. The prolonged exposure to trauma that one experiences may impact the individual's self-continuity, or the integrity one would feel throughout life, which is vital in order for the individual to feel as though he is a "whole" person (van der Kolk et al., 1996).

The fifth hypothesis that more recent trauma was associated with higher dissociation was supported. Participants in this study who reported having trauma that occurred at the time of assessment or in the recent past were more likely to have significantly higher dissociation than individuals who reported trauma in the more distant past. van der Kolk et al.'s (1996) asserted: "Each succeeding phase in human development demands a (re)establishment of psychic

coherence and continuity" (p. 370). This reestablishment may not be achieved when an individual suffers a recent trauma.

Each of the four trauma dimensions was found to be significantly associated with dissociation. Therefore, they were placed in a simultaneous regression model with the dissociation score as the dependent variable and each of the dimensions as independent variables in order to determine which trauma dimension had the greatest impact on an individual's dissociative symptomatology. Multiple trauma was the only significant dimension in this model. An individual's number of traumatic episodes had the most significant effect on dissociation. Despite age of onset of trauma, repeated insults of trauma to an individual's sense of self may disrupt that person's ability to integrate experience in the present, or have a sense of continuity across one's lifetime (van der Kolk et al., 1996). Furthermore, even an older individual who has a stable and consolidated sense of self may experience a disintegration of the self following multiple traumatic episodes.

Additionally, multiple trauma was significantly correlated with the trauma dimensions of age of onset and chronicity. An individual with multiple trauma may have begun having trauma at an earlier age and, therefore, over a longer period of time. If so, then perhaps, this leads to a repeatedly ruptured self over several developmental periods. This may make it challenging to pass through the stage-salient developmental tasks and form a consolidated self (Sroufe et al., 1986) across time and contexts. Thus, a reliance on the more primitive, and ultimately detrimental, defense mechanism of dissociation may form (Spiegel, 1986).

The seventh hypothesis that age of subject moderated the effect of recency on dissociation was supported. That is, a younger individual was more vulnerable than an older individual to dissociate when faced with the effects of recent trauma. This could be due to older

individuals having a more consolidated and stable sense of self than younger individuals. This could also be due to older individuals having more sophisticated and mature defense mechanisms and more coping skills in general; while, younger individuals may rely on the less sophisticated defense mechanism of dissociation.

Finally, the last hypothesis that gender moderated the effect of age of onset of trauma on dissociation was also supported. That is, men's dissociation scores tended to remain relatively flat despite age of onset; while, women's dissociation scores appeared much greater for women with lower age of onset as compared to women with higher age of onset. This could be due to the fact that women have more dissociation than men (Bryant et al., 2003; Fullerton et al., 2001; Olff et al., 2007) and are up to three times more likely to suffer from sexual abuse as a child than males (Putnam, 2003; Tolin et al., 2006) and it has been shown that child sexual abuse is associated with dissociation (Macfie et al., 2001a; Macfie et al. 2001b).

The present study results were in accordance with the current empirical literature that trauma is associated with dissociation. Ross et al. (2008) performed a cross-cultural test of the trauma model of dissociation in Winnipeg, Canada and Shanghai, China with individuals with similar rates of reported childhood physical and sexual abuse. The results of this study have the Chinese and Canadian participants scoring similarly on various measures of dissociation, evidencing support for the trauma model of dissociation. In a study with greater similarity to the goals and hypotheses of the present study, Hagenaars et al. (2011) sampled adult outpatients and measured dimensions of trauma such as age of onset and multiple trauma. Hagenaars et al. (2011) had similar results as the current study such that outpatients who reported childhood trauma or multiple trauma had greater dissociation than patients who endorsed trauma as an adult or only a single trauma. Dominguez et al. (2004) used a sample of adult outpatients and found

that elevated dissociation scores were correlated with endorsement of physical and sexual abuse in early childhood as well as the increased prevalence of traumatic episodes in an individual's lifetime. As in the present study, Hagenaars et al. (2011) found that multiple trauma was the most important trauma dimension contributing to higher dissociation. Nevertheless, the current study extended the knowledge of the above mentioned studies by adding hypotheses that address each of the trauma dimensions. While, Ross et al. (2008) did not study any of the four trauma dimensions (age of onset, multiple trauma, chronicity, recency) as they directly related to dissociation. Additionally, Dominguez et al. (2004) only studied the multiple trauma dimension and excluded any investigation of the other three trauma dimensions. Also, Hagenaars et al. (2011) did not examine chronicity or recency and how they impacted dissociation. Finally, none of these studies examined the complex interaction effects of age of subject and its moderating effect on recency; nor did they study gender and its moderating effect on age of onset. In sum, the present study extended the current literature by investigating the trauma dimensions of age of onset, multiple trauma, chronicity, and recency simultaneously in one study, as well as delving deeper into the more complicated interaction and moderation relationships these trauma dimensions and other characteristics of the sample had on dissociative symptomatology.

When an individual at an early age experiences multiple and /or chronic traumatic experiences that adversely affect development, such as child maltreatment or loss of a primary caregiver, it is referred to as Complex Trauma (van der Kolk, 2005). The phenomenon of Complex Trauma has become such a significant issue with many deleterious and long-lasting effects, that a task force has been formed in order to create a more precise and accurate diagnosis for these children. A provisional diagnosis called Developmental Trauma Disorder has been proposed and focuses on the "triggered dysregulation in response to traumatic reminders,

stimulus generalization, and the anticipatory organization of behavior to prevent the recurrence of the trauma effects" (p. 406).

What does this mean clinically for these individuals? It necessitates a strong emphasis on early intervention and a primary focus on the trauma being discontinued. Ideally, trauma should cease before a therapist and client begin to attempt to integrate the individual's various traumatic experiences and fragmented sense of self (Macfie et al., 2001a; Macfie et al. 2001b). Also, before the client can begin "processing" the trauma(s), a safe place should first have been created (van der Kolk, 2005) and a strong therapeutic alliance with the therapist should be formed in order to examine the trauma in a non-overwhelming manner without enacting the trauma but instead exploring it in a therapeutic context.

Developmental trauma can cause dysfunction in several aspects of daily life, including: family, work, education, peer relationships, and legal matters (van der Kolk, 2005). Individuals with developmental trauma have also been shown to have significantly higher usage rates of medical and mental health services (Drossman et al., 1990). For instance, veterans who have had complex trauma histories are more likely to be vulnerable to subsequent trauma, specifically the development of combat-related PTSD, and may need mental health services more than veterans who had no prior trauma (Bremner, Southwick, Johnson, Yehuda, & Charney, 1993). With this finding, concerns arise regarding the potential necessity to assess an individuals' history of trauma prior to deployment and/ or combat exposure. Could this simple assessment improve the overall mental health of the average U.S. veteran and allow them to live more normative and productive lives when they return? In addition, individuals who have experienced childhood trauma, such as child abuse and neglect, have significantly higher usage rates of social and correctional services (Drossman et al., 1990) and populate close to the entire U.S. criminal

justice system (Teplin, Abram, McClelland, Dulcan, Mericle, 2002).

There were some limitations to the present study. When investigating dissociation and trauma, using a retrospective self-report measure is problematic due to the very nature of dissociation and the possible memory loss associated with the occurrence of trauma. For instance, there was a study completed that investigated murderers with DID. In that study, they found that those individuals in almost all cases either had partial or even total amnesia for the maltreatment they endured as a child. Physical and sexual abuse was underreported, minimized, and even denied completely in this sample of individuals whose abuse was termed "torture" by the authors. Furthermore, it shows that even when faced with an opportunity to malinger and use their traumatic histories to their benefit, these murderers underreported and in many cases denied any abuse, as they "could barely remember anything about their childhoods" (Lewis, Yeager, Swica, Pincus, & Lewis, 1997, p. 1709).

Furthermore, Murray, Ehlers, and Mayou (2002) discussed problems with incomplete processing that occurs during a trauma and may lead to "deficits" in the sequence, organization, and completeness of the traumatic memory ranging from uncertainty about chronology of the event to complete amnesia for the traumatic event. van der Kolk and Fisler (1995) also described a difference in the information processing of traumatic memory. For instance, ordinary information may be "transcribed into personal narratives" (p.13) while traumatic memories may be "imprinted as sensations" (p.13) that are not automatically and unconsciously synthesized and processed symbolically. When these sensory memories begin to be communicated and integrated as part of an individual's personal narrative, it is now socially constructed, as all explicit memories are, and may become distorted, embellished, and/ or contaminated. Nevertheless, Paley and Alpert (2003) did a review of the empirical literature on the validity of traumatic

memories in early childhood. The authors reported that, in general, young children, and even infants, retain their traumatic memories in verbal, partial verbal, and nonverbal forms and were recalled as adults.

Another limitation was that individuals who seek treatment may be more affected and/ or disturbed by trauma than those who are not seeking treatment. Their traumatic memories may be more salient or their symptoms may be more distressing causing them to seek treatment. Therefore, the findings of the current study may be magnified due to the fact that all the participants were seeking mental health services at the time of assessment.

In the current study, cause and effect relationships cannot be concluded as the statistics employed imply correlation instead of causation. That is, it cannot be inferred that the significant results demonstrate that trauma or its specific dimensions cause dissociation. Further, one could speculate that proneness to dissociate may indeed cause trauma. For instance, in the DES there are questions that if endorsed by an individual at a high rate, may produce accident proneness and thereby increase the risk of a trauma occurring. For example, as stated in the DES: “Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them;” or “Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip” (Bernstein et al., 1986). In the first case, an individual may be unaware of an intruder in the house or a burning pot on the stove. In the second situation, an individual may become involved in a motor vehicle accident due to lack of attention to the task of driving.

Another limitation of the present study was the difficulty operationalizing each of the trauma dimensions. Specifically, chronicity had several possible operational definitions in the

empirical literature, as did recency. Measuring multiple trauma was also difficult as many individuals denoted experiencing child maltreatment over several years. So, attempting to conceptualize and denote discrete traumatic episodes was in some ways implausible. Also, since nearly all of the trauma dimensions correlated with each other, it is difficult to determine the distinct contribution of each dimension due to their interconnected nature. A final limitation of the present study was the limited amount of demographic information obtained from the psychological clinic's intake packet due to participants' lack of responses to some or all of the demographic questions. Obviously, these questions are voluntary and perhaps of a sensitive nature; thus an individual cannot be required to provide responses in order to receive psychological services. Therefore, due to the limited amount of demographic information available, it may be difficult to generalize the results to various populations based on race, ethnicity, socioeconomic status, etc.

In conclusion, the present study did more than replicate the field's current knowledge and understanding of the relationship between trauma and dissociation. Instead it magnified the present knowledge; while augmenting and highlighting areas that had been previously de-emphasized or ignored in the empirical literature. For instance, it appeared that ultimately multiple trauma, despite age of onset, chronicity, or recency, had the most weight when conceptualizing the complex relationship between dissociation and trauma. Nevertheless, each of these trauma dimensions was significantly associated with greater dissociation, including recency which was essentially ignored in the pursuit of comprehending and conceptualizing the intricate and multifaceted link between trauma and dissociation. Furthermore, the profound influence demographic characteristics, such as age of subject and gender, had on the various trauma dimensions has not been established thus far in the scholarly literature.

In the future, a more comprehensive investigation including an examination of the various subtypes of trauma and how each subtype may uniquely impact an individual's dissociative symptomatology is imperative. Data from the current study could be further analyzed and divided into the six subtypes of traumatic experiences that are included in the TEC: emotional neglect, emotional abuse, physical abuse, sexual harassment, sexual abuse, and miscellaneous traumatic episodes (e.g. loss of a family member, witnessing others undergo trauma, or serious bodily injury). Determining the distinct impact each of these types of trauma has on dissociation would have significant implications in the empirical literature and clinical treatment of individuals who suffer from specific types of trauma and dissociation. Equally as essential, is an investigation of several personality dimensions, as measured by the Minnesota Multiphasic Personality Inventory -2, MMPI-2, (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) and other personality assessment tools. The relationship of personality traits and how they relate to dissociation and the subtypes of trauma is a crucial element vital in the process of illuminating the characterological effects of trauma and dissociation.

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Appendix

Table 1: Research Supporting the Effect of Age of Onset of Trauma on Dissociation

Author(s)	Year	# Participants	Gender	Age	Clinical Vs. Non-clinical	Type(s) of Trauma	Measures of Dissociation	Findings
Egeland, B. and Susman-Stillman, A.	1996	24 Subsample of 267	Female	12-37 yrs.	Non-clinical	Child abuse	Dissociative Experiences Scale	Mothers in the continuity group scored significantly higher on the DES than mothers who did not continue the cycle of abuse.
Irwin, H.J.	1994	121	Both	19-72 yrs.	Non-clinical	Childhood trauma	Questionnaire of Experiences of Dissociation	Familial loss, interfamilial/ extrafamilial sexual abuse significantly predicted QED scores.
Johnson, D.M., Pike, J.L., and Chard, K.M.	2001	89	Female	18-56 yrs.	Clinical	Child sexual abuse	Dissociative Experiences Scale	The amount of peritraumatic dissociation and the degree of belief that one would be killed were risk factors for more severe dissociative symptoms as an adult.

Table 1: Continued

Author(s)	Year	# Participants	Gender	Age	Clinical Vs. Non-clinical	Type(s) of Trauma	Measures of Dissociation	Findings
Kilpatrick, D. G., Resnick, H. S., Freedy, J. R., Pelcovitz, D., Resick, R, Roth, S., & van der Kolk, B.	1994	528	Both	15 and older	Both	Physical, sexual, emotional abuse, neglect, adult physical/ sexual assault, witnessing violence	Modified version of the Diagnostic Interview Schedule, the NWS PTSD module	Earlier trauma has a more profound impact on dissociation.
Kirby, J.S., Chu, J.A., & Dill, D.L.	1993	64	Female	18-60 yrs.	Clinical	Physical, sexual abuse	Dissociative Experiences Scale	More severe, more chronic, and earlier age of onset of trauma are associated with increased dissociative symptomatology.
Lipschitz, D.S., Kaplan, M.L., Sorkenn, J., Chorney, P., & Asnis, G.M.	1996	114	Both	Adult	Clinical	Physical, sexual abuse	Dissociative Experiences Scale	Repeated childhood trauma and childhood trauma in conjunction with trauma in adulthood are significantly related to the degree of dissociation.

Table 1: Continued

Author(s)	Year	# Participants	Gender	Age	Clinical Vs. Non-clinical	Type(s) of Trauma	Measures of Dissociation	Findings
Macfie, J., Cicchetti, D., & Toth, S.L.	2001	45 Maltreated 33 Nonmaltreated	Both	4-6 yrs.	Non-clinical	Physical, sexual abuse, neglect	Child Dissociative Checklist	Maltreated preschool-aged children exhibited more dissociation than nonmaltreated children.
Macfie, J., Cicchetti, D., & Toth, S.L.	2001	155 Maltreated 43 Nonmaltreated	Both	3-6 yrs.	Non-clinical	Physical, sexual abuse, neglect	Child Dissociative Checklist	Maltreatment in general, severity, multiple subtypes, and chronicity were related with more dissociation.
Ogawa, J.R., Sroufe, L.A., Weinfield, N.S., Carlson, E.A., and Egeland, B.	1997	168	Both	18-19 yrs. At time of last testing	Non-clinical	Childhood trauma	Dissociative Experiences Scale, several other age-appropriate questionnaires	Age of onset of trauma, severity of trauma, and chronicity all predicted dissociation scores.
Quimby, L. G. and Putnam, F. W.	1991	70	Both	18-60 yrs.	Clinical	N/ A	Dissociative Experiences Scale	More severe dissociative symptoms were linked with aggression in a state mental hospital.

Table 1: Continued

Author(s)	Year	# Participants	Gender	Age	Clinical Vs. Non-clinical	Type(s) of Trauma	Measures of Dissociation	Findings
Saxe, G. N., van der Kolk, B. A., Berkowitz, R., Chinman, G., Hall, K., Lieberg, G., & Schwartz, J.	1993	110	Both	Adult	Clinical	Physical, sexual abuse, neglect, family chaos, witnessing violence	Dissociative Experiences Scale, DDIS	Psychiatric patients who scored higher than 25 on the DES reportedly significantly higher rates of trauma as a child.
Shearer, S.L.	1994	62	Female	18-52 yrs.	Clinical	Physical, sexual, emotional abuse, neglect, adult physical/ sexual assault, witnessing violence	Dissociative Experiences Scale	Individuals with more self-reported trauma had more dissociation and DES scores were predicted by sexual/ physical abuse as a child and adult sexual assault.
Watson, S., Chilton, R., Fairchild, H., & Whewell, P.	2006	139	Both	Adult	Clinical	Physical, sexual, emotional abuse, emotional/ physical neglect	Dissociative Experiences Scale	Individuals who experienced trauma as a child have increased dissociative symptoms later in life.

Table 2: Research Not Supporting the Effect of Age of Onset of Trauma on Dissociation

Author(s)	Year	# Participants	Gender	Age	Clinical Vs. Non-clinical	Type(s) of Trauma	Measures of Dissociation	Findings
Hardt, D.A.	2003	16	Male	36-76 yrs.	Clinical	Physical assault, sexual assault, crime, general disaster/ trauma, witnessing violence, losing a loved one	Dissociative Experiences Scale	The experience of childhood trauma did not predict the use of dissociation more than the experience of adulthood trauma.
Nash, M.R., Hulsey, T.L., Sexton, M.C., Harralson, T.L., and Lambert, W.	1993	105 Abused and Nonabused	Female	Adult	Both	Child sexual abuse	Indiana Dissociation Scale, Dissociation Content Scale	Childhood sexual abuse was associated with increased dissociation; however, when family pathology was controlled for, significance was no longer obtained.

Table 2: Continued

Author(s)	Year	# Participants	Gender	Age	Clinical Vs. Non-clinical	Type(s) of Trauma	Measures of Dissociation	Findings
Repasky, S.A.	2001	290	Both	Adult	Non-clinical	Physical assault, sexual assault physical, sexual abuse	Dissociative Experiences Scale, Dissociation Questionnaire	Individuals with trauma before age 10, after age 10, and no history of trauma had no significant difference on the DES.
Swartz, T.S.	2002	40	Female	Adult	Non-clinical	Child sexual abuse, adult trauma experiences	Dissociative Experiences Scale	Age of onset of trauma had no significant effect on the DES scores.
Zlotnick, C., Begin, A., Shea, M.T., Pearlstein, T., Simpson, E., and Costello, E.	1994	56	Female	Adult	Clinical	Physical, sexual abuse	Dissociative Experiences Scale	Age of onset of trauma had no significant effect on dissociative symptoms. However, revictimization was found to be associated with increased dissociation as an adult.

Table 3: Demographics for Participants at Time of Assessment, $N = 245$

Demographics (N)	M (SD)
Age (245)	29.47 (10.95)
Household Income (140)	$32,159.00 ($31,670.40)
Persons In Household (185)	2.51 (1.41)
	%
Gender, female (245)	54
High School Diploma/ GED (224)	90
Some College (224)	79
Employed (190)	42
Married (213)	25
Minority Status (140)	9

Table 4: Demographics for Participants Reporting Trauma and No Trauma and Dissociative Experiences Scale (DES) Scores

	Trauma (N = 177)	No Trauma (n = 33)
Demographics	*M* (*SD*)	*M* (*SD*)
Age	29.67 (11.03)	25.97 (9.43)
Household Income	$30,081.00 ($28,529.93)	$45,132.00 ($44,433.48)
Persons In Household	3.00 (2.00)	2.36 (1.05)
DES Scores	12.95 (10.93)	4.60 (3.93)
	%	%
Gender, female	55.9	51.5
High School Diploma/ GED	91.5	90.9
Some College	81.4	84.8
Employed	44.6	36.4
Married	26.6	15.2
Minority Status	9.0	9.1

Table 5: Descriptive Statistics for Trauma Dimensions, $N = 177$

Dimensions	*M* (*SD*)	Range
Age at Assessment (years)	29.67 (11.03)	18.00 – 65.00
Age of Onset (years)	7.63 (8.06)	0.00 – 62.00
Age of Last (years)	25.38 (10.71)	1.00 – 62.00
Number of Trauma Episodes	5.93 (4.25)	1.00 – 22.00
Chronicity (years)	13.86 (11.83)	1.00 – 55.00
Recency (years)	4.29 (6.68)	0.00 – 36.00
Dissociation Score	12.95 (10.93)	0.00 – 63.21

Table 6: Correlations between Trauma Dimensions, $N = 177$

Trauma Dimensions	1	2	3	4
1. Age of Onset	1.00			
2. Multiple Trauma	-.38***	1.00		
3. Chronicity	-.58***	.51***	1.00	
4. Recency	.01	-.22**	-.27***	1.00

*$p < .05$; **$p < .01$; ***$p < .001$, two-tailed.

Table 7: Correlations between Trauma Dimensions and (DES), $N = 177$

Trauma Dimensions	*DES*
Age of Onset	-.22**
Multiple Trauma	.29***
Chronicity	.28***
Recency	-.17*

*$p < .05$; **$p < .01$; ***$p < .001$, two-tailed.

Table 8: Simultaneous Multiple Regression Analyses Demonstrating the Relationship between Dissociation and Trauma Dimensions, $N = 177$

Independent Variables	β	B	*t*	R^2 (adj.)	*F*	*df*
Regression		10.29	4.15***	.12 (.10)	5.78***	4, 172
Age of Onset	-.08	-0.11	-0.88			
Multiple Trauma	.18	0.45	2.07*			
Chronicity	.12	0.11	1.21			
Recency	-.10	-0.17	-1.33			

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

Table 9: Hierarchical Multiple Regression Analyses Demonstrating the Moderating Effects of Age of Subject and Recency on Dissociation, $N = 177$

Step	Independent Variables	ΔR^2	β	B	*t*	R^2 (adj.)	*F*	*df*
1	Regression	.03		12.95	15.92***	.03 (.02)	2.81	2, 174
	Age of Subject		.04	0.04	0.52			
	Recency		-.19	-0.31	-2.35*			
2	Regression	.04		12.36	14.88***	.07 (.05)	4.31**	3, 173
	Age of Subject		.01	0.01	0.08			
	Recency		-.32	-0.52	-3.45***			
	Age of Subject * Recency		.25	0.02	2.67**			

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

Table 10: Hierarchical Multiple Regression Analyses Demonstrating the Moderating Effects of Gender and Age of Onset of Trauma on Dissociation, $N = 177$

Step	Independent Variables	ΔR^2	β	B	*t*	R^2 (adj.)	*F*	*df*
1	Regression	.22		12.59	10.36***	.05 (.04)	4.27*	2, 174
	Gender		.03	0.64	0.39			
	Age of Onset		-.21	-0.29	-2.89**			
2	Regression	.27		12.49	10.37***	.07 (.06)	4.50**	3, 173
	Gender		.03	0.71	0.44			
	Age of Onset		.02	0.03	0.18			
	Gender* Age of Onset		-.29	-0.47	-2.16*			

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

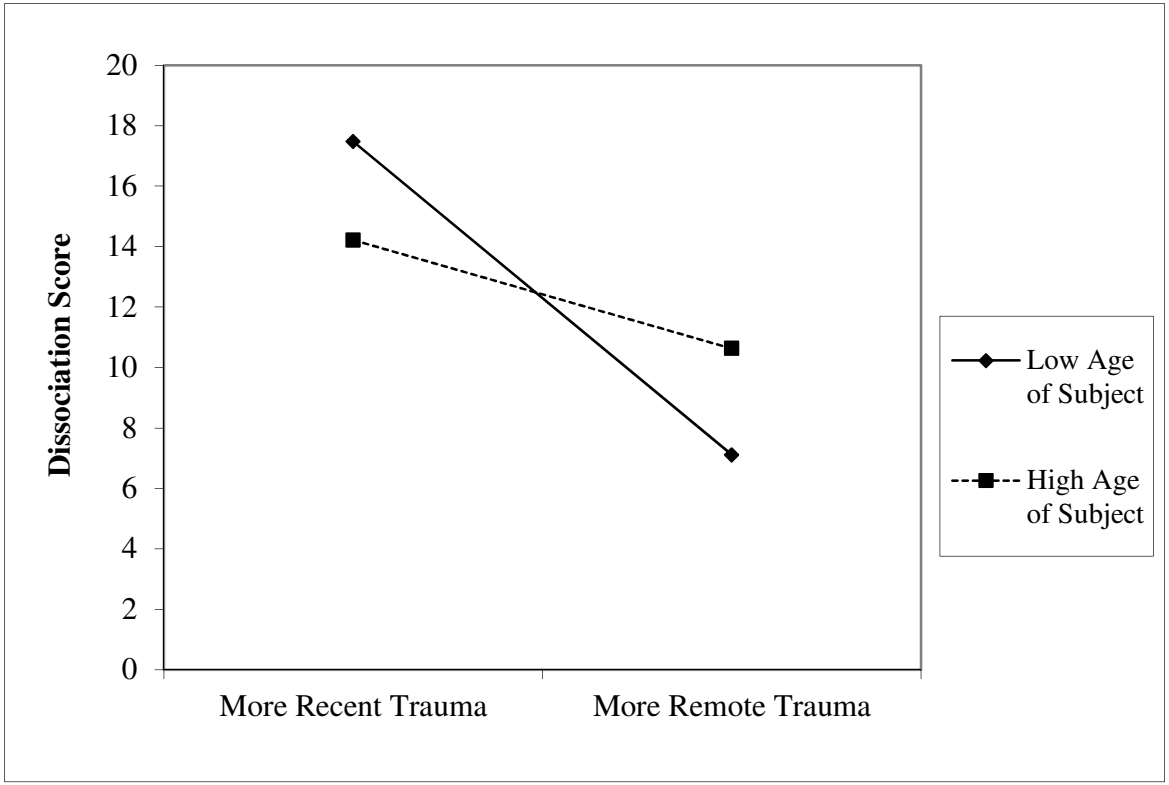

Figure 1: Interaction Effect between Age of Subject and Recency of Trauma on Dissociation

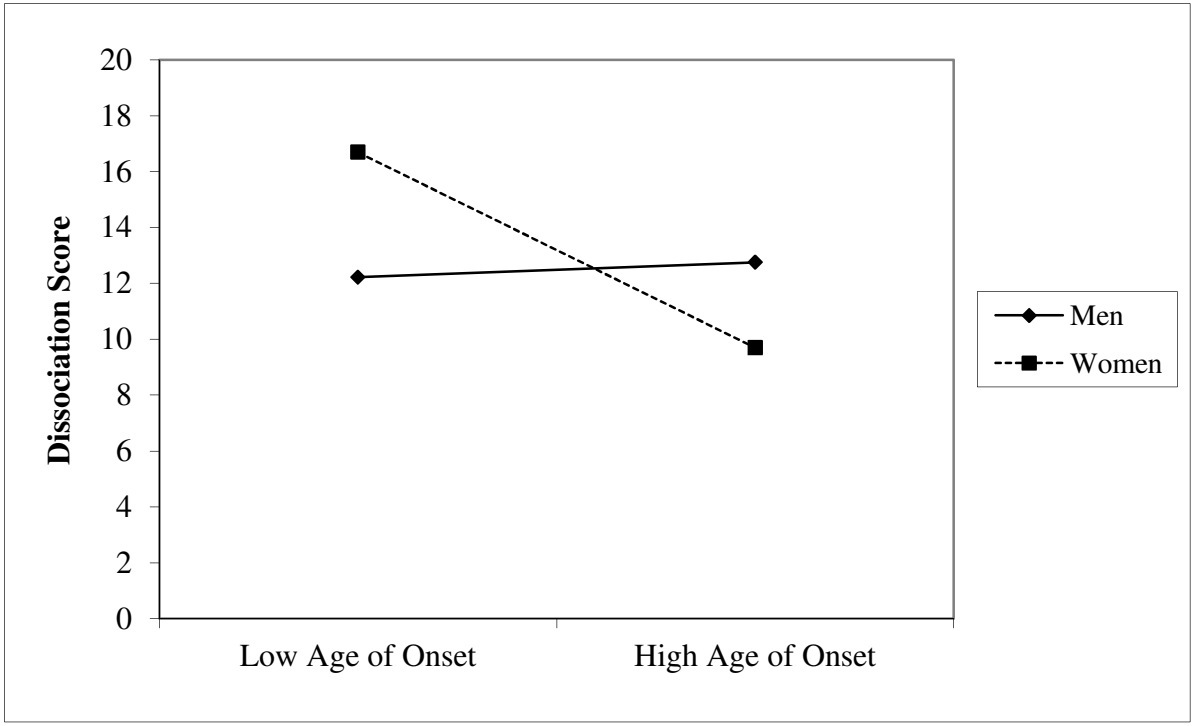

Figure 2: Interaction Effect between Age of Onset of Trauma and Gender on Dissociation

Vita

Amineh Abbas was born and raised in Knoxville, TN. She graduated *magna cum laude* from Louisiana State University in 2006 with her Bachelor of Science in Psychology and a minor in Anthropology. In Louisiana, she worked in two psychological labs, one clinical and one cognitive. This experience, along with working in the LSU Psychological Services Center, helped solidify her future career goals of being a Clinical Psychologist. She also served as Editor-in Chief of the *delta undergraduate journal*, LSU's literary journal. In 2007, she enrolled at the University of Tennessee in Knoxville. While at the University of Tennessee, she was the Time Series Research Co-Coordinator for three years. She continues to be a graduate student therapist at the UT Psychological Clinic and a Clinical Psychologist Associate at Cherokee Health Systems. She is also currently a student representative of the Appalachian Psychoanalytic Society. Amineh plans to continue to pursue her doctorate degree in Clinical Psychology at the University of Tennessee in Knoxville.