OVERGENERAL MEMORY AND POSTTRAUMATIC STRESS DISORDER IN ADULTS EXPOSED TO FAMILY VIOLENCE

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Childhood exposure to familial violence increases risk for adult pathology, namely posttraumatic stress disorder (PTSD) and depression. Primary PTSD symptoms of hyperarousal and avoidance are implicated in overgeneral memory (OGM) theory in prior research. Individuals with trauma history tend to report OGMs, or non-specific autobiographical memories, perhaps to avoid unpleasant arousal elicited by recalling specific events. OGM, PTSD, depression, and arousal were assessed in adults with and without familial violence history. Arousal was measured via galvanic skin response (GSR) during an autobiographical memory task (AMT), requiring memory recall in response to emotionally-valenced cue words. Familial violence history was linked to higher incidence of PTSD symptoms. Childhood psychological violence was predictive of adult PTSD. Rates of depression, OGM, and arousal did not significantly vary by violence history. Significant gender differences were found relating to type of violence exposure and adult functioning. Research limitations, clinical implications, and future research suggestions are discussed.
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CHAPTER 1
INTRODUCTION

A study conducted by the U.S. Department of Justice found that 51.9% of surveyed women and 66.4% of surveyed men reported being physically assaulted as a child by an adult caretaker (Tjaden & Thoennes, 2000). More recent data collected on a nationally representative sample suggests that approximately 15.5 million children in the U.S. are living in homes where interparental violence has occurred in the past year (McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006). These statistics highlight the escalating nature of this socially pervasive crisis. Clearly, continued research is needed to understand how this type of violence exposure affects later functioning.

Topic Outline

First, a broad overview of the progression of research on family violence is presented. Next, both short-term and long-term effects of exposure to family violence are introduced. An in-depth review of the unique PTSD presentation in victims of violence follows. Then variables which may alter long-term outcomes are discussed. Next, the theory underlying overgeneral memory is described. To conclude, a study evaluating OGM and PTSD in relation to exposure to family violence is presented.

Directions in Family Violence Research

Researchers have studied violence within the family network, and its negative impact on children, extensively since the early 1970s. The specific types of violence studied have varied over time, with an early focus on child physical abuse (CPA). In an early study of children aged
5-13, Green (1978) found a significantly higher incidence of self-abuse behaviors, including suicide attempts and self-mutilation, among physically abused children compared to two non-abused control groups. Later studies investigated child sexual abuse (CSA; Feerick & Haugaard, 1999; Higgins & McCabe, 1994). More recently, studies have focused on children’s exposure to violence between adults (CEV), and psychological and physical neglect as forms of abuse. Past research on family violence has included both quantitative and qualitative studies, conducted with community and shelter-resident samples.

In a qualitative study on CEV, Holden (2003) identified a taxonomy of exposure, which explored 10 specific ways that children may be exposed to violence, including both direct and indirect forms of exposure. Types of direct exposure commonly referenced include eye witnessing and overhearing the altercation, as well as intervening, whereby a child attempts to stop the physical violence. Less obvious forms of direct exposure include victimization, wherein a child is inadvertently harmed during a violent encounter between parents, and participation, when a child is forced to take part in the violence. Indirect forms of exposure include child observation of the initial effects or aftermath of violence, such as damaged property, physical injuries, or a visit from police. Additionally, children may indirectly experience violence by hearing relatives reference the violent event, or by being forced to relocate to a new school or home. These multiple forms of exposure highlight the variety of ways children may experience family violence.

Although most studies have assessed isolated types of violence, there is a recent push to investigate multiple types of maltreatment (Higgins & McCabe, 2000, 2003). Multi-type maltreatment is a comprehensive term, referring to CPA, CSA, CEV, psychological maltreatment, and neglect. This trend was brought about, in part, by the large overlap in types of
violence typically experienced by children. Numerous studies have shown that it is much more
common for children to experience multiple types of violence rather than one single type
(Feerick & Haugaard, 1999; Higgins & McCabe, 2003).

In a sample of women with a history of CEV, a high proportion also reported
experiencing CPA and CSA (Feerick & Haugaard, 1999). Still another study of women and
children in a domestic violence shelter found a high correlation between reports of CPA and
psychological maltreatment (Jarvis, Gordon, & Novaco, 2005). The high rates of co-occurrence
among different types of family violence make it especially difficult to link specific types of
maladjustment to only one category of violence (Henning et al., 1996). For this reason, it is
important that researchers account for multiple types of violence experienced.

More to the point, significant similarities have been observed in the psychological
outcomes associated with CPA, CSA, CEV, psychological maltreatment, and neglect (Higgins &
McCabe, 2003; Higgins, 2004). Children victimized by multiple types of violence are at greater
risk, compared to those who experience singular forms of violence, for exhibiting depression,
insecure attachments, and anxiety disorders (Levendosky, Huth-Bocks, & Semel, 2002; Higgins,
2004). Higgins and McCabe (2000) found that multi-type maltreatment was a significant risk
factor for developing trauma symptoms and depression. Jarvis, Gordon, and Novaco (2005)
found an association between depression and CSA, and also between anger and violence
frequency. Higgins and McCabe (2003) found that, among women who reported CSA, it was not
the CSA itself but other types of family violence that accounted for low self-esteem and trauma
symptoms experienced as an adult. Taken together, these results indicate that maladjustment
experienced both as a child and an adult may have characteristic, and perhaps cumulative, effects
regardless of the type of violence experienced.
Childhood Effects

Numerous studies have shown that children reared in violent homes are at increased risk for multiple types of pathology, such as depression, conduct disorder, and separation anxiety (Holden & Ritchie, 1991; Pelcovitz, Kaplan, DeRosa, Mandel, & Salzinger, 2000; Sternberg, Lamb, Guterman, & Abbott, 2006). Exposure to violence clearly places a child at increased risk for psychological maladjustment (Carlson, 2000). For example, Pelcovitz et al. (2000) found that physically abused adolescents endorsed more symptoms of depression, separation anxiety disorder, posttraumatic stress disorder, and oppositional defiant disorder than did a control group of non-abused adolescents.

Researchers have also described a wide range of behavioral, social, and emotional consequences of CEV (Wolfe, 2003). These include rebellion and disobedience (externalizing), as well as social withdrawal and depression (internalizing; Markward, 1997; Wolfe, 2003). In a sample of school children, it was found that developmental delays, such as speech impediments, were common among those exposed to violence (Mullender et al., 2002). Progress in school may also suffer when violence occurs in families, given that mothers are often forced to relocate in efforts to separate from the aggressor (Mullender et al., 2002). The stress of living in a violent household often carries over to school, making it difficult to concentrate and succeed (Pelcovitz et al., 2000).

Some researchers have pointed to ineffective parenting as a compounding risk factor, increasing the potential for maladjustment in already-at-risk children (Holden & Ritchie, 1991). Parental behaviors that often co-occur with violence, such as substance abuse, alcoholism, and criminal activity, also put children at increased risk. Feerick and Haugaard (1999) found that family violence is highly associated with substance abuse. A parent devoting their time and
attention to illegal activity is simply not capable of being an optimally nurturing and effective caregiver.

Ritter, Stewart, Bernet, Coe, and Brown (2002) found that adolescent females living with abusive, alcoholic parents were at increased risk for social conduct disorder relative to those living with only one type of family dysfunction. They also demonstrated that, after accounting for exposure to violence, only parental alcoholism remained a significant predictor of subsequent adolescent substance abuse. These findings demonstrate the need to investigate adolescent behavior and its effect on adult psychological outcome.

Long-Term Effects

During the past 30 years, there has been an increase in studies investigating the long-term effects of exposure to family violence. Not surprisingly, adult survivors of violent homes have endorsed many of the same symptoms of anxiety, depression, and social dysfunction present in children. Several studies have found that family violence during childhood is related to adult depression and feelings of hopelessness (Langhinrichsen-Rohling, Monson, Meyer, Caster, Sanders, 1998; Silvern et al., 1995). Many lines of research have shown adult survivors of CEV to have low self-esteem relative to controls with no history of CEV (Silvern et al., 1995). Interestingly, Silvern et al. found this trend of low self-esteem to be true only for females. A more recent study found similar results in an ethnic minority sample. Davies, DiLillo, and Martinez (2004) found that Latina women with a history of CEV reported lower self-esteem and more depressive symptoms than similar women without such a history. These groups were not significantly different in age or ethnicity; however, the control group did report a higher Hollingshead SES score.
One of the most consistently reported long-term outcomes of exposure to violence, specifically CEV, is that of intergenerational violence transmission (Jankowski, Leitenberg, Henning, & Coffey, 1999; Moretti, Obsuth, Odgers, & Reebye, 2006). Intergenerational transmission may be defined as children exposed to violence either perpetrating and/or falling victim to violence in an adult relationship. Social learning theory maintains that children have a tendency to model, or imitate, their parents’ behavior (Bandura, 1973). Von Steen (1997) asserted that adult relationships involving individuals with a history of family violence often involve anger, mistrust, and fear of abandonment.

Jankowski, Leitenberg, Henning, and Coffey (1999) suggest that gender roles may play a part in the intergenerational transmission of violence. They found that participants who witnessed violence perpetrated by their same-sex parent were more likely to become perpetrators as adults. Conversely, those who witnessed a same-sex parent as the victim of violence were at no elevated risk as adults for becoming victims of violence. Gender differences were also demonstrated in a recent study examining the effect of exposure to family violence on adolescents’ physical aggression toward peers (Moretti et al., 2006). Among males in the sample, a significant correlation was found between exposure to father-perpetrated violence and physical aggression toward peers. Females from the same sample who were also exposed to father-perpetrated violence, however, did not engage in similarly aggressive acts. Some suggest that girls reared in violent households may come to view violence as a normative part of an intimate relationship, causing them to be more tolerant of abuse in their own partnerships (Bensley, Van Eenwyk, & Simmons, 2003). In fact, one study found that women with a history of CPA or CEV were four to six times more likely than women without a history of violence to be in a physically abusive adult relationship (Bensley, Van Eenwyk, & Simmons, 2003).
Other researchers have studied intergenerational transmission as a function of personality disorders in perpetrators. Ehrensaft, Cohen, and Johnson (2006) looked at personality disorder (PD) symptoms longitudinally in individuals with a history of CEV, CPA, and neglect. They hypothesized that experiencing such violence would increase PD symptoms, which would then predict adult perpetration of violence. They found that those most predisposed to perpetration of violence had personality traits of distrust, constricted affect, and interpersonal avoidance. This finding is in agreement with Feerick and Haugaard (1999) who found that adults with a history of CEV demonstrated increased rates of social avoidance. In general, those with a history of CEV report less perceived social support, sense of attachment, and sense of social integration than those without a history of CEV (Henning et al., 1996). These results highlight the fact that exposure to traumatic events, such as family violence, during childhood is often predictive of adult pathology.

*Posttraumatic Stress Disorder*

Posttraumatic stress disorder (PTSD) was first included in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM – III*; American Psychiatric Association, 1980). Since then, numerous studies have shown increased rates of PTSD among adults exposed to family violence during childhood above the general population (Roth, Newman, Pelcovitz, van der Kolk, & Mandel, 1997; Courtois, 2004). Diamond and Muller (2004), for example, found that college students with a history of CEV reported more PTSD symptoms than a control group of students with no history of family violence.

The most current edition, *DSM-IV-TR*, identifies three symptom categories of PTSD: persistent avoidance of trauma related stimuli, persistent symptoms of increased arousal, and persistent reexperiencing of the traumatic event (*DSM- IV-TR*; American Psychiatric
Association, 2000). One study conducted with a multiethnic sample from a domestic violence shelter investigated the three types of PTSD symptoms in adults with a history of CPA and/or CEV (Griffing et al., 2006). Results showed a significant elevation of cognitive intrusion and hyperarousal symptoms in individuals with a history of family violence compared to adults without a history of violence; no significant difference was found, however, for symptoms of avoidance. The authors offered the explanation that avoidance may be indicative of a more severe course of PTSD, and would therefore predispose an individual to more severe forms of psychopathology (Griffing et al., 2006).

The primary criterion for diagnosis of PTSD is exposure to a traumatic event in which the person experienced a threat to the physical integrity of themselves or others, involving a reaction of extreme fear or feelings of helplessness (American Psychiatric Association, 2000). Examples of traumatic stressors listed in the DSM-IV-TR include terrorist attacks, natural disasters, and severe motor vehicle accidents. One similarity of these traumatic events is that they occur at discreet intervals, and most often last for relatively short periods of time. Moreover, these types of trauma do not usually involve people with whom the victim shares a meaningful relationship, such as family members (Courtois, 2004). Many researchers have argued that, unlike the aforementioned examples, the trauma experienced by victims of family violence is qualitatively different in that it is often ongoing and chronic, rather than a single, isolated event (Courtois, 2004). Furthermore, family violence is thought to differ from many other forms of trauma because it most often escalates over its duration. This unique type of trauma is thought to elicit symptoms that are qualitatively different than those subsumed under the typical PTSD presentation.
Researchers have referred to PTSD in victims of family violence and other ongoing, chronic traumas as complex PTSD (Courtois, 2004; Roth et al., 1997). Complex PTSD has alternately been referred to as complicated PTSD, disorders of extreme stress, and disorders of extreme stress not otherwise specified (DESNOS). During the *DSM-IV* field trial for PTSD, several psychologists specializing in trauma research conducted a study with a community sample in an effort to address qualitative differences in the nature of PTSD experienced by victims of family violence (Roth et al., 1997). The goal of this investigation was to validate symptoms unique to complex PTSD. Results of the field trial demonstrated that 72% of the sample previously diagnosed with PTSD also met criteria for complex PTSD. This finding was especially true for participants who had experienced CSA, with 76% meeting criteria for complex PTSD, compared to 53% of participants who had a history of CPA only (Roth et al., 1997).

Symptoms under investigation in the *DSM-IV* field trial included alterations in: affect regulation and impulse control, attention or consciousness, self-perception, perpetrator perception, and systems of meaning. Alterations in attention or consciousness were operationalized as amnesia and transient dissociative and depersonalization episodes. Family violence victims also exhibited alterations in perpetrator perception by changing their opinion of the violence perpetrator, ranging from idealization to intent to harm (Roth et al., 1997). Somatization symptoms were also investigated, including chronic pain, cardiopulmonary symptoms, and gastrointestinal problems. Behavioral correlates of alterations in affect and impulse control included inappropriate modulation of anger, self-destructive behavior, and excessive risk taking.
Neuropsychologists have investigated physiological arousal measured via skin conductance as a physical correlate to behavioral problems with affective and impulse control (Elsesser, Sartory, & Tackenberg, 2004). Skin conductance, alternately referred to as galvanic skin response (GSR), is a relatively primitive form of physiological measurement measuring the resistance of the skin to an applied minute electrical current. In a hallmark article, Seligman (1975) investigated skin conductance as a physiological indicator of emotion. Although GSR technology is simple, it is utilized to this day in research investigating arousal as well as forensic psychology applications in the form of the lie detector apparatus. Utilizing GSR for trauma research, Elsesser, Sartory, and Tackenberg (2004) investigated differences in physiological arousal upon presentation of trauma-relevant stimuli in victims of recent trauma (2–6 weeks post-trauma) and individuals with chronic PTSD utilizing GSR technology.

Although both recent trauma victims and those with chronic PTSD due to retrospective trauma displayed elevated heart rates in response to trauma-relevant pictures, only those with a long-term trauma history exhibited symptoms of anxiety and depression. Moreover, only the chronic PTSD participants were found to have an exaggerated startle reaction. Elsesser (2004) and colleagues theorized the differences in physiological arousal may be due to recency of the traumatic event. Many researchers have investigated alternative factors underlying the differential outcome of individuals reporting recent versus retrospective traumas (Kolbo, 1996; Markward, 1997). Indeed a wealth of research has focused on what factors may decrease risk for pathology in adults exposed to familial violence during childhood (Kolbo, 1996; Markward, 1997; Kilpatrick & Williams, 1998).
**Variables Affecting Long-Term Outcome**

Prinz and Feerick (2003) identified research investigating variables which may affect positive and negative outcomes in adult violence survivors as an integral area of family violence research. These variables are often referred to as moderators and mediators (Baron & Kenny, 1986). A moderator is defined as a third variable, either qualitative or quantitative, that affects the relationship between an independent variable and the outcome variable (Baron & Kenny, 1986). In essence, a moderator is an additional independent variable. In the current study, a moderator would be defined as some variable that alters the psychological (depression, PTSD), cognitive (OGM), or physiological (arousal) outcome of adults exposed to family violence as children. Moderators that can buffer negative outcomes have been alternately referred to as protective factors (Levendosky, Huth-Bocks, & Semel, 2002).

Gender is one commonly investigated moderator. In his study of a clinical sample of children aged 8 to 11, Kolbo (1996) found a positive correlation between CEV and behavioral problems among girls, and a negative correlation between CEV and self-worth among boys. Some studies have found girls to be at higher risk than boys for suffering adverse effects after exposure to familial violence (Sternberg et al., 2006). Overall, however, findings regarding differences according to gender have been relatively modest and inconclusive (Kolbo, 1996). Researchers have suggested that these mixed findings are the result of differing expressions of distress between genders rather than a true indication of differences in resiliency or vulnerability (Kilpatrick & Williams, 1998). Traditionally, boys under distress will act out whereas girls are prone to internalizing their distress, although studies have provided mixed evidence of these generalizations (Sternberg et al., 2006).
Another moderator studied is the family socioeconomic status, or SES. This factor is primarily determined by family-of-origin annual income and may take into account the parents’ level of educational attainment. Low family income has been linked to developmental difficulties in children (Kolbo, 1996). Moreover, history of CEV has been linked to low familial SES in past research (Henning et al., 1996). A lack of financial resources can generate immense stress for the family, particularly for mothers who frequently bear the burden of providing for dependents. Living below the poverty level is a significant risk factor for optimal development and can lead to malnourishment, poor educational attainment, and lack of healthcare access (Chandler, 2008). Therefore, family violence that co-occurs with a low familial SES may be more distressing than violence occurring in higher SES families. For this reason, financial resources may be considered a protective factor as they increase access to support entities, thereby decreasing the victim’s financial dependence on the aggressor (Chandler, 2008).

A mediator, on the other hand, is a variable that that changes in regard to the independent variable, thereby affecting the outcome variable. A mediating variable accounts for the relationship between a given predictor and the dependent variable (Baron & Kenny, 1986). That is, a mediator is distinctively different than a moderator, in that it is the reason underlying a relationship between a predictor and an outcome. One frequently investigated mediator is that of social support (Kilpatrick & Williams, 1998). Social support has been defined as a transfer of resources between two individuals for the purposes of enhancing the recipient’s well-being (Kolbo, 1996). Past research has shown social support to have a protective affect against otherwise negative experiences including divorce and general maltreatment (Silvern et al., 1995; Higgins et al., 1996; Higgins & McCabe, 2003). Social support has been demonstrated as promoting self-esteem, self-reliance, social competence, and a heightened sense of empathy.
(Kolbo, 1996). Each of these factors contributes to a sense of self-efficacy and use of positive coping skills, both of which decrease risk for suffering PTSD and depression in adulthood (Chandler, 2008). Self-worth is a key factor identified in past studies researching the mechanism by which social support buffers one from long-term distress (Kolbo, 1996). Based on past research, it appears that social support serves to buffer against decreased feelings of self-worth in children exposed to violence.

Overall, research findings concerning moderators and mediators of adult outcome have been mixed. Kilpatrick and Williams (2000) investigated a multitude of potential moderators and mediators, including the child’s age, gender, locus of control, self-blame, perception of threat, and coping style, in addition to maternal emotional health, and aspects of the violence experienced. Surprisingly, they found no significant relation between PTSD level and any of the expected predictors. Still other researchers have found support for high familial SES and availability of social support as protective factors against detrimental effects of violence exposure during childhood (Henning et al., 1996; Kolbo, 1996). Given the previous research conducted with individuals exposed to violence, it is predicted in the current study that variables of family income and social support will serve as protective factors against long-term pathology, namely PTSD and depression.

*Overgeneral Memory*

In a new trend in research on moderators, Higgins and McCabe (2003) have pointed to the child’s cognitive interpretation of family violence as an important factor affecting adult outcomes. They stressed that the influence and significance a person attributes to a traumatic event may affect long-term psychological outcomes. One type of cognitive interpretation recently studied is the quality of memories for childhood abuse. In a particularly interesting
longitudinal study, Greenhoot, McCloskey, and Glisky (2005) interviewed children living in a domestic violence shelter, first at ages 6-12, and again six years later. During the second interview, however, most of the adolescents left out details of the abuse. Some even completely forgot, or at least failed to report, any of the family violence they had reported during the first interview. This failure to report was especially true for mother-directed and more severe forms of violence. This general memory decline was unique to violent events, as it was not noted for positive or neutral memories, such as the name of their teacher at the time of the first interview. These findings lend credence to speculation that adult victims of trauma may fail to recall the full extent of the abuse they suffered during childhood. Such information is integral to understanding the variation in cognitive interpretation and encoding of traumatic memories across different individuals.

Some studies have found evidence that people with PTSD differ from non-PTSD controls in the way they recall traumatic memories. Schonfeld and Ehlers (2006) asked participants to retrieve specific memories in their life in response to cue words. Individuals with PTSD were more likely to report overgeneral statements which implicated several different events, rather than a memory of a single specific event. An example of a chronic event could be family violence, whereas an ongoing event is more similar to a natural disaster situation. Hauer, Wessel, and Merckelbach (2006) identified two types of OGMs – *categoric*, those encompassing a broad generalization of multiple similar or related events, and *extended*, which refers to a single event lasting more than one day. For example, ‘on Christmas we would always go to grandma’s house’ would be classified as a categoric memory, while ‘during spring break in the 3rd grade, we went to the beach’ would be an extended memory. Theorists have argued that categoric and extended OGMs may be reflective of a lack of ability, or willingness, to recall non-overgeneral, specific
memories. Past research has demonstrated that OGMs occur most often in the form of categoric memories rather than extended memories (Williams et al., 1996).

A similar OGM tendency has also been demonstrated by depressed individuals (Kuyken, Howell, & Dalgleish, 2006). In fact, it was not clear in the previously mentioned Schonfeld and Ehlers’ (2006) study whether OGM was uniquely related to PTSD or co-occurring substance abuse and depression. Kuyken, Howell, and Dalgleish (2006) investigated OGM in a sample of adolescents having a diagnosis of major depressive disorder (MDD), both with and without a history of trauma. Interestingly, they found that adolescents with MDD but no history of trauma exhibited more OGM than those with a history of trauma. These results seem to indicate that depression predisposes one to OGM recall independent of a traumatic past. A similar proclivity towards overgeneral memory recall was reported by Williams and Broadbent (1986) in a sample of people with a history of attempted suicide. This result is meaningful, given that depression often increases one’s risk of attempting suicide.

A meta-analysis of 41 studies investigating OGM and depression yielded mixed findings (van Vreeswijk & de Wilde, 2004). Whereas some researchers found rates of OGM to differ significantly with respect to depressed mood state, others found no link between memory specificity and depression (van Vreeswijk & de Wilde, 2004). Given that most studies on OGM have been conducted with clinical samples, Hauer, Wessel, and Merckelbach (2006) investigated the phenomenon, as related to PTSD, in a non-clinical sample of undergraduate students. They found that, of the three symptom types underlying PTSD, only avoidance was significantly associated with OGM recall. Even after controlling for depressive symptoms and recency of the traumatic event, PTSD remained significantly correlated to OGM. These ambiguous results point
Researchers have investigated several hypotheses for the common presentation of OGM in individuals with PTSD and depression. Most studies have pointed to OGM as a function of innate memory processes, suggesting that the brain might repress memories of specific traumatic events while simultaneously emphasizing recall of less severe, more positive recollections (Greenhoot, McCloskey, & Glisky, 2005). OGM may be indicative of an actual change in the affect regulation system in individuals exposed to trauma, whereby the lack of specific memories is a long-term, learned cognitive style (Williams et al., 1996). This suggested mechanism would, therefore, preclude psychopathology as the underlying cause of OGM. By investigating OGM in a non-clinical sample, the current study aims to clarify some of these inconsistencies. From this perspective, the traumatized child might attempt to make sense of a relatively uncontrollable and unpredictable chaotic home life by conceptualizing events in general, non-specific ways (van Vreeswijk & de Wilde, 2003). Detailed and specific recollections of trauma might elicit more psychophysiological arousal than general, or non-specific memories (Kuyken, Howell, & Dalgleish, 2006). Individuals might successfully avoid this uncomfortable arousal by focusing on general concepts rather than reliving the memory to the extent that would be necessary to offer explicit detail.

Study Objectives

The current study is designed to meet the need for research investigating the long-term consequences of exposure to violence, including measures of physiological arousal and psychological maladjustment (Prinz & Feerick, 2003). To that end, variables under investigation include history of family violence during childhood (including CPA, CSA, CEV, psychological
maltreatment, and neglect) as predictive of adult PTSD symptoms, depression, OGM, and physiological arousal. A quasi-experimental between-subjects design was implemented. History of the various subtypes of family violence represented group status (independent variable) for most analyses. Criterion variables under investigation include PTSD, depression, OGM and physiological arousal. When possible, a correlational single-cohort design was utilized to complement the finding based on the quasi-experimental design.

Based on prior research, the overarching hypothesis of the study is that adults with a history of family violence will exhibit more symptoms of PTSD than adults without a history of violence. It was also hypothesized that participants with a history of family violence would endorse more symptoms of depression than those without such a history. Another hypothesis was that adults with a history of violence would exhibit more OGM than adults without a history of violence. Additionally, it was expected that participants with a history of family violence would display increased physiological arousal, or electrodermal reactivity, as measured by a GSR amplifier, compared to controls. Furthermore, it was expected that participants reporting physical types of violence (CPA, CSA) would display more psychological maladjustment (PTSD and depression symptoms) than those reporting non-physical types of violence (CEV, psychological violence, and neglect). Finally, it was hypothesized that participants with more social support and higher family-of-origin incomes would exhibit fewer symptoms of PTSD and depression than those with relatively less support and financial resources.
CHAPTER 2

METHOD

Participants

The sample consisted of 21 male and 41 female undergraduates studying at the University of North Texas. The sample ranged in age from 18 to 35 ($M = 21.95, SD = 5.48$). Race/ethnicity composition of the sample was as follows: 49.2% Caucasian/Non-Hispanic, 16.4% African American, 16.4% Hispanic, 9.8% Asian, and 8.2% other ethnicity. Participants were recruited from the UNT research participant pool via the online Sona System. This system allows students to register for studies via the Internet. Students majoring in psychology are required by the department to earn at least four points of research credit. Participation in research via enrollment in the Sona System is one method available to earn research points. Students earn approximately one credit for each half hour of participation. The present study was listed on the Sona System under the abbreviated heading, Family History and Autobiographical Memories. Criteria for exclusion included active suicidality and minor status; students under the age of 18, as well as those who were actively suicidal were to be excluded from participating. At study completion, no volunteers were excluded on the basis of these exclusion criteria.

Setting and Apparatus

The study was conducted in a laboratory on the University of North Texas campus in Terrill Hall, Room 260. The laboratory consists of one general waiting area, approximately 7’ x 12’, located at the center of four separate assessment rooms, each of which is approximately 7’ x 7’. In addition to the four assessment rooms, there is one larger room located off the waiting area which has been designated as the laboratory office. One of these assessment rooms was
designated the data collection room, where the participant was housed throughout the study. Auxiliary to this room, within the laboratory office, an experimenter (either myself or RA) was located at a desk which houses two monitors, one showing the GSR data output and the other showing the AMT task exactly as the participant sees it. This setup allowed the experimenter to have full awareness of the participant’s state without having to exit and reenter the data collection room multiple times, which might elicit undue arousal.

During the study, each participant remained in the data collection room which houses the participant’s desk, a desktop computer, and the MP150® GSR apparatus. The MP150® is a GSR amplification device designed by BIOPAC Systems, Inc®. (See Figure 1). It records galvanic skin response data via adhesive electrodes which are attached to the participant’s index and middle fingers. Output data were then delivered to the desktop computer located at the experimenter’s desk in the laboratory office. The data collection room is also linked to the laboratory office via intercom and video systems. Audio recording software, Media Lab®, was used to record participants’ speech samples. Participants wore headphones with an accompanying microphone device.

Instruments

Each participant received a packet consisting of the following self-report measures: a demographic questionnaire, Comprehensive Child Maltreatment Scale – Adult, Impact of Event Scale – Revised, Center for Epidemiological Studies – Depression Scale. The demographic questionnaire asked for participants’ gender, age, educational background, race/ethnicity, marital status, annual income, employment status, sources of social support during childhood, family-of-origin income, and family-of-origin composition.
The Comprehensive Child Maltreatment Scale – Adult version (CCMS-A) is a 22-item retrospective self-report measure with 5 subscales of childhood maltreatment: Physical Abuse (3 items), Sexual Abuse (11 items), Witnessing Family Violence (2 items), Psychological Abuse (3 items), and Neglect (3 items) (Higgins, 2004). Participants indicate the frequency with which they experienced each type of maltreatment, ranging from 0 = never to 5 = more than 20 times. Each item is answered for the respondent’s mother, father, and other adult/adolescent at least 5 years older than the respondent. Data from the CCMS-A may be analyzed by aggregate sum scores from each of the five subscales, or cutpoints can be utilized. Previous studies have generally considered the mean for each of the five subscales to be the natural cutoff. Scores beyond this value classify the participant as having experienced a given type of maltreatment (Higgins & McCabe, 2000).

In their investigation of the psychometric properties of the CCMS-A, developers Higgins and McCabe (2001) conducted multiple studies. Studies 1 and 2 were completed with a sample of 313 adults to assess retrospective reports of violence experienced during childhood. Studies 3 and 4 (n = 100) assessed a parallel form of the CCMS-A, the CCMS-P, for use with parents’ reports regarding their children ages 5 to 12 years. Results of the studies revealed satisfactory test-retest and internal consistency reliabilities for each scale of the CCMS-A. When compared to the Child Abuse Trauma Scale via exploratory factor analysis, criterion validity of the CCMS-A was evidenced by high correlations between appropriate subscales. To date, the CCMS-A is the only self-report paper-and-pencil research measure assessing multiple forms of family violence.

The Impact of Event Scale – Revised (IES-R; Weiss & Marmar, 1997) is a 22-item self-report measure comprised of the three PTSD symptom categories identified in the DSM-IV-TR:
Intrusion (7 items), Avoidance (8 items), and Hyperarousal (7 items). Participants are instructed to rate, on a 5-point Likert-type scale, the degree of distress caused by given symptoms over the past week (0 = not at all, 4 = extremely). In addition to the three subscale scores, the IES-R yields an overall score representing PTSD symptom intensity.

Internal consistency alphas calculated by the original authors range from .87 to .92 (Intrusion subscale), .84 to .86 (Avoidance subscale), and .79 to .90 (Hyperarousal scale). Items on the IES-R are highly similar to PTSD criteria outlined in the DSM-IV-TR, and are therefore thought to be an accurate and content-valid measure of the construct. Using a clinical sample with history of trauma, Baumert et al. (2004) investigated the construct validity of the IES-R; the item-to-subscale correlation was highest within the Avoidance subscale. Factor analysis supported the three subscales listed above. Comparison of the three subscales to other psychometric measures of PTSD also supported the convergent validity of the IES-R (Baumert et al., 2004). In their study of an adult sample of 111 female residents in a domestic violence shelter, Griffing et al. (2006) found that the IES-R distinguished between residents with a history of family violence exposure and those without a reported history of family violence. Specifically, participants with previous violence exposure endorsed more PTSD symptoms of intrusion and hyperarousal on the IES-R compared to participants with no reported history of family violence.

The Center for Epidemiologic Studies Depression (CES-D) scale is a 20-item measure assessing four dimensions: 1) Depressed Affect, 2) Positive Affect, 3) Somatic-Retarded Activity and 4) Interpersonal Relations (Schroevers, Sanderman, van Sonderen, & Ranchor, 2000). Schroevers et al. (2000) recommend using the total score as a continuum ranging from 0-60, rather than individual subscale or cutoff scores. Based on their total score, participants’ depression symptoms can be classified as either: severe, moderate, mild, or minimal. Factor-
analyses confirmed that the CES-D is composed primarily of two factors, namely depressed affect (16 items) and positive affect (4 items).

In their psychometric analysis of the CES-D factors, Schroevers et al. (2000) conducted an investigation with a clinical sample and a non-clinical reference group. Results supported the depressed affect factor as a valid indicator of depression, with good internal consistency reliability and strong correlation to alternative measures of psychological distress. Moreover, the depressed affect factor distinguished reliably between the clinical and non-clinical participant groups (Schroevers et al., 2000). Principal component analyses with varimax rotation and confirmatory simultaneous component analyses were conducted to assess the validity of the CES-D. Analyses of the two-factor structure confirmed that depressed affect and positive affect are indeed independent factors, as indicated by their correlations with various related psychosocial measures. This finding was strongest for the depressed affect factor, which was strongly related to other measures of depressive symptomology ($r = 0.77$). Positive affect, however, displayed a relatively weak correlation to reference measures of depressive symptoms ($r = 0.50$). Similarly, item-analyses conducted for the clinical sample revealed weaker internal consistency for positive affect ($\alpha = .75$) than for depressed affect ($\alpha = .87$); related values for the positive and depressed affect in the non-clinical sample were $\alpha = .76$ and $\alpha = .88$, respectively. Overall, analyses of the two-factor structure question the usefulness of the 4 positively formulated items. Thus, in the present study, the CES-D was scored both with and without the positive affect items. The Pearson’s $r$ correlation of the CES-D scored with and without positive affect items was $r = 0.97$, therefore it is treated as a single score in all data analyses.

The Autobiographical Memory Test (AMT), originally developed by Williams and Broadbent (1986), consists of five positive (happy, proud, excited, loved, hopeful) and five
negative (lonely, frightened, sad, angry, ashamed) cue words, presented in an alternating fashion. Participants are instructed to recall a memory in response to each cue word. A memory is defined as an event that occurred at a particular place and time, lasting no more than one day (Williams & Broadbent, 1986). The participant was reminded of this definition once during the introduction to the task, and again visually via on-screen reminder instructions. A memory was classified as an OGM if the participant failed to report an event occurring at a particular place and time, and lasting no more than one day. A previous study using similar scoring methods resulted in inter-rater reliability of 0.81 for specific memories, and 0.68 for overgeneral memories. Previous researchers have cautioned against oral presentation of cue words, and have stressed the importance of audio-recording participant responses as a means of avoiding experimenter biases (van Vreeswijk & de Wilde, 2003). To control for potential biases, the current AMT task involved presentation of cue words in black 28-point font, one at a time, on a white computer screen. Each word was on-screen for 3 minutes, during which time participants verbalized their memory which was recorded by the Media Lab® software program. Two neutral cue words (grass and brown) were introduced first in order to orient the participant to the exercise.

Several studies have demonstrated increased OGMs in participants with PTSD or depressive symptoms (Hauer, Wessel, & Merckelbach, 2006; Kuyken, Howell, & Dalgleish, 2006; Schoenfeld & Ehlers, 2006). Using a similar computerized version of the AMT, Schoenfeld and Ehlers (2006) found a correlation between OGM and PTSD symptoms in an outpatient sample of adults who had experienced trauma. Their study also demonstrated test-retest reliability of participants’ OGM recall on the AMT across both a standard written and novel picture version. They found that the AMT distinguished between those with a diagnosis of PTSD and those without a diagnosis. Those participants with PTSD related OGMs more
frequently than those without PTSD on both the original word version and a novel picture version of the AMT.

Galvanic skin-response (GSR) is one commonly employed method of measuring sweat gland, or electrodermal, activity which is a physiological indicator of arousal. GSR is therefore commonly referred to as electrodermal response, or EDR. GSR involves the application of a minute electric current (0.5V) across the skin. The GSR amplification device then measures electrical activity and generates a visual analog output. Activity, or electrical conductance, is elicited as the result of pre-secretory activity of eccrine sweat glands, when coiled tubular glands begin to fill with liquid. When an individual is presented with arousal-eliciting stimuli, their EDR conductance will increase relative to their baseline EDR state. EDR is also known to habituate relatively fast, so the presentation of multiple stimuli does not interfere with any resultant activity.

In their review, Fowles et al. (1981) described the formation of a committee of experts with the goal of providing recommendations for the most effective techniques in electrodermal activity measurement. In a subsequent analysis of multiple methods for recording EDR, Fowles et al. (1981) discussed the usefulness of skin conductance measurements, or GSR, over skin potential responses. They described that skin potential measurements are often vulnerable to false positives due to hydration effects, a problem which is not as likely using GSR. According to consensus among experts in physiological research, skin conductance recordings are best obtained using silver-silver chloride electrodes and a 0.050 M sodium chloride electrode paste (Fowles et al., 1981). Furthermore, they recommended that time since electrolyte application be standardized across participants. Employing the above criteria promotes valid measurement of electrodermal activity (Fowles et al., 1981).
Using 345 monozygotic and dizygotic twins in a matched-sample design, researchers investigating the cross-situational consistency of EDR found significant test-retest stability, \( r = .70 \), and cross-task stability using GSR technology (Crider, et al., 2004). Turpin, Schaefer, and Boucsein (1999), working with undergraduates, used EDR to measure physiological arousal upon presentation of auditory stimuli increasing in intensity and duration. EDR was found to be a valid indicator of arousal, as the noise increase from 60 to 100dB elicited increased EDR activity. Finally, working with a sample of adolescents in a laboratory setting, Kalamas and Gruber (1998) investigated the effect of witnessing violent scenes on EDR activity. Interestingly, participants exhibited a significant startle response to both actual and implied violence. The comparable startle reaction elicited by implied violence reemphasizes the importance of considering all forms of family violence as potential triggers of anxiety.

**Procedures**

Written informed consent was obtained prior to participation. The informed consent document was thereafter stored separately from all other measures and documents. Participant confidentiality was maintained by assigning participant numbers. Upon arrival at the laboratory, participants first met with the experimenter (either myself or RA) in the data collection room, where they were asked about history of suicide attempts or current suicidal ideation. Any actively suicidal persons were to be referred to the University of North Texas Counseling and Testing center where they were entitled to eight free sessions. Participants excluded on the basis of these criteria would have been afforded their research credit for the time of their involvement.

Next, the participant was oriented to the MP150® GSR amplifier and computer. After listening to the informed consent procedures, participants were allowed to ask any questions they had concerning the study. Participants were also informed of their right to stop participation at
any point during the study, and were supplied with a copy of the informed consent document to retain for their own records.

The participant was first instructed to begin the computerized AMT. During the computerized AMT, the experimenter (either myself or RA) was located in the laboratory office out of direct view of the participant. Video monitoring equipment allowed the experimenter to view the participant without intruding on their privacy during the task. GSR data were displayed on a computer screen at the experimenter’s desk, along with a second monitor displaying the AMT task as the participant saw it. This set-up allowed the experimenter to monitor the participant during the AMT without exiting and reentering the room.

Following completion of the AMT, the participant completed self-report measures: CES-D, IES-R, CCMS-A. The CCMS-A always preceded the IES-R in order to cue a specific troubling event to be referenced in the latter measure. Order of CES-D administration was counter-balanced across participants, either before or after the IES-R and CCMS-A pair, in order to rule out potential ordering effects. The demographics sheet was completed after all other tasks to rule out potential stereotype threat. The total time spent in the laboratory was approximately 1 hour and 30 minutes, after which the participant was debriefed on the purposes of the study. Participants were also reminded of their entitlement to counseling at the University of North Texas Counseling and Testing Center in the event that they were distressed by the study procedures.
CHAPTER 3

RESULTS

Data Examination

Prior to analysis, all data were entered into SPSS 17.0® for Windows and examined for missing values, extreme values, and overall accuracy. Skewness and kurtosis were also assessed, and several primary variables were found to be non-normal, operationalized as a skew or kurtosis greater than 3.3 (Howell, 2010). This finding may be due to the relatively low n of 62, resulting in overall higher sensitivity of normality tests. In an attempt to correct this prior to employing parametric statistical analyses for hypothesis testing, several data transformations were sequentially implemented based on the nature of each variable’s distribution, including square-root, logarithmic, reciprocal, and arcsine transformations. For those variables that remained non-normal following transformation, supplementary non-parametric analyses have been employed. See Table 1 for a list of variables whose normality was improved via transformation.

Non-parametric analyses include chi square and supplementary qualitative data analysis. Parametric statistical analyses include Pearson’s r correlations, analyses of variance, t-tests and multiple regressions. Parametric statistical analyses are reported for non-transformed original variables as well as transformed variables where applicable. This is an effort to maintain the original integrity of the data, as many of the variables currently under investigation are not expected to be normally distributed in the greater population. A priori research hypotheses were examined using Pearson’s r correlations, analyses of variance, t-tests, and multiple regression analyses. A critical significance alpha level of .05 was used for all statistical analyses. As per
Cohen’s (1988) criteria, Pearson’s $r$ correlations and beta weights are interpreted as small ($r = .10$), medium ($r = .30$), or large ($r = .50$).

**Demographic Data**

Participants in the current sample ranged in age from 18 to 53 years ($M = 21.95$, $SD = 5.48$). Descriptive statistics are presented for all categorical demographic variables in Table 2, including participants’ gender, race/ethnicity, marital status, current educational level, employment status, and both current and family-of-origin annual income.

Independent samples $t$-tests were conducted in order to determine whether participants with a history of familial violence differ demographically from those without a history of familial violence. These analyses employed the dichotomous (Y/N) family violence variable compared to non-transformed demographic variables. Results of these analyses indicated a significant age difference between participants with and without a history of childhood sexual abuse (CSA) (See Table 3). Specifically, participants endorsing CSA had a higher mean age ($M = 26.10$, $SD = 10.25$) than those with no CSA history ($M = 21.14$, $SD = 3.61$); ($t [59] = 2.76$, $p < .01$). Also, participants with a history of CSA reported a lower mean ($M = 3.22$, $SD = 2.50$) family-of-origin annual income level than those with no CSA history ($M = 7.09$, $SD = 2.88$); ($t [54] = 3.76$, $p < .01$).

Results of a chi square analysis further substantiated the significant relationship between family-of-origin annual income and history of CSA, such that participants in the low family income category reported a significantly higher incidence of CSA than those in the high family income category ($\chi^2 = 31.91$, $p < .01$). Therefore, it appears that incidence of CSA was endorsed at significantly greater rates in older participants with relatively low family of origin incomes.
Means for each family violence subtype did not significantly differ across any other participant demographic categories.

Independent Variable Derivation

Data collected from the Comprehensive Child Maltreatment Scale – Adult version (CCMS-A) regarding history of familial abuse experienced was analyzed on multiple levels. Authors of the CCMS-A suggest two methods of scoring, 1) aggregate sum scores from each of the five subscales and 2) utilization of standard cut points. Previous studies have generally considered the participant mean for each of the five subscales to be the natural cut point. Scores beyond this value classify the participant as having experienced that subtype of familial violence (Higgins & McCabe, 2000).

In accordance, for the first level of analysis, raw totals across items were summed for each of the five violence subtypes: CSA, childhood physical abuse (CPA), childhood exposure to violence (CEV), psychological violence, and neglect. Next, means and standard deviations were derived for these totals. Shapiro-Wilk normality tests revealed that each of the five raw violence subtypes distributions was non-normal, therefore sequential data transformations were implemented in an effort to improve normality. Raw psychological violence totals were amenable to improvement via a logarithmic transformation (See Table 1). Given the CCMS-A authors’ scoring recommendations as well as the non-normality of the remaining violence subtypes, a binary Yes/No variable was then computed for each violence subtype based on the mean for each subscale, such that scores falling above the subscale mean were given a value of 1 = Yes, and those falling below the mean were given a value of 0 = No. Participants endorsing rates of violence above the mean cutoff for each subtype, as well as sample means and standard deviations for all CCMS-A data, are listed in Table 4.
For the second level of analysis, individual’s categorizations as yes or no for each of the five violence subtypes were examined to identify co-occurrence patterns across participants. Based on this co-occurrence analysis, participants were subdivided into three frequently-observed violence pattern groups: (1) those reporting solely physical violence (CSA, CPA; \( n = 22 \)); (2) those reporting solely non-physical violence (CEV, psychological violence, neglect; \( n = 18 \)); and (3) those reporting no familial violence history (\( n = 21 \)).

These subgroups were selected for targeted supplementary analyses primarily because they represent the most cohesive and logical categorization of the current data. Also, the number of participants representing each of these three subgroups was markedly similar. Moreover, separating physical from non-physical violence may help to tease out potential confounding results; that is, adult outcome symptoms reported may represent psychological difficulties due to physical maladies suffered during childhood. Therefore, the physical, non-physical, and no violence participant subgroups are utilized in several supplementary statistical analyses implemented below.

Hypothesis Testing

The present study included a total of five primary a priori research hypotheses. An overarching goal of the present study was to evaluate the connection between childhood exposure to familial violence and psychological maladjustment in adulthood. For the purposes of the current research, psychological maladjustment is operationally defined as PTSD and depressive symptoms as measured on two self-report scales: the Impact of Events Scale – Revised (IES-R) and the Center for Epidemiological Studies – Depression Scale (CES-D), respectively.
**PTSD Symptoms**

The first research hypothesis of the study predicted that participants with a history of familial violence would report more posttraumatic stress disorder (PTSD) symptoms as adults than those with no violence history. In Table 5, means and standard deviations are reported for participants’ current PTSD symptoms comprising the IES-R subscales of Avoidance, Intrusion, and Hyperarousal. Each of the IES-R subscale total distributions were shown to be non-normal via Shapiro-Wilk normality tests. Therefore, sequential data transformations were implemented based on distribution shape. Given that no transformations were unsuccessful in satisfying Shapiro-Wilk normality tests, supplementary analyses are outlined below. The following parametric analyses employ non-transformed variables, however.

Non-transformed variables were utilized in independent samples t-tests which revealed that participants with a history of familial violence had significantly higher IES-R total PTSD scores ($t \ [59] = 2.62, \ p = .01$) than participants with no familial violence history. There was also a significantly higher incidence of PTSD-related avoidance symptoms ($t \ [59] = 2.90, \ p < .01$) in participants endorsing familial violence history than participants with no violence history. Similarly, a higher incidence of adult PTSD-related intrusion symptoms ($t \ [59] = 2.22, \ p < .05$) was reported by participants endorsing familial violence history than those with no violence history. No significant difference was found for hyperarousal symptoms, however ($t \ [59] = 1.82, \ p > .05$). Overall, these findings support the first a priori research hypothesis.

As a follow up analysis, a one-way analysis of variance (ANOVA) (utilizing non-transformed IES-R variables) was conducted to investigate whether adults with a history of exclusively physical violence differed in PTSD symptom presentation from those with a history of exclusively non-physical violence, and/or those with no history of familial violence. Analyses
were conducted for non-transformed PTSD total scores as well as each of the three non-transformed symptom subscales: hyperarousal, avoidance, and intrusions. Statistically significant differences were found on PTSD total scores ($F_{[2, 58]} = 3.38, p < .05$) as well as on the PTSD-related avoidance subscale ($F_{[2, 58]} = 4.47, p < .05$).

Tukey post-hoc comparisons of the three groups indicated that the mean avoidance subscale score for participants reporting a history of exclusively physical familial violence was significantly greater ($p = .014$) than the comparable subscale score for participants with no violence history. That is, individuals endorsing a history of exclusively physical violence ($M = 12.55, SD = 14.72$) reported more PTSD symptoms overall than those with no familial violence history ($M = 2.48, SD = 3.50$). Similarly, a higher incidence of PTSD-related avoidance symptoms was also reported by participants endorsing exclusively physical violence ($M = 6.80, SD = 8.70$) relative to those with no violence history ($M = 0.71, SD = 1.38$). Rates of hyperarousal ($F_{[2, 58]} = 1.88, p > .05$) and intrusions ($F_{[2, 58]} = 2.48, p > .05$) were, however, not significantly different across the three participant subgroups. It was predicted that participants reporting solely physical forms of violence would report more total PTSD symptoms than participants reporting solely non-physical violence. Although this general pattern was observed in the means, (Physical Violence $M = 12.55, SD = 14.72$; Non-physical violence $M = 12.13, SD = 19.94$), the result was not statistically significant.

**Supplementary PTSD Analyses**

Given that data transformations were unsuccessful in improving normality of PTSD-related variable distributions, supplementary non-parametric analyses were implemented using IES-R subscale scores translated into dichotomous (Yes/No) variables. For each subscale, a majority of participants indicated $0 = \text{none}$, which was utilized in non-parametric analyses as the
no category. All participants indicating IES-R subscale scores greater than 0 were therefore included in the yes category. Chi square analyses were implemented utilizing categorical variables of familial violence history (yes/no) and each of the three IES-R subscale scores as well as IES-R total score. Results of these analyses revealed no significant relationships between violence history and translated dichotomous IES-R scores.

Depression Symptoms

The second type of adult psychological distress assessed in the current sample is that of depressive symptoms. The related a priori research hypothesis predicted that participants with a history of familial violence would endorse more symptoms of depression, as measured on the CES-D scale, than those with no history of familial violence. Means and standard deviations are reported for participants’ current depressive symptoms based on the CES-D measure in Table 5. Total scores ranged from 22.11 – 57.89. Based on the shape of the CES-D distribution, an inverse transformation was implemented and found to satisfy the Shapiro-Wilk normality test (See Table 1). Independent samples t-tests were then implemented using both the original non-transformed variable \( t [59] = 0.615, p > .05 \) and transformed variable \( t [59] = 0.10, p > .05 \). Neither analysis revealed a significant difference in current depressive symptoms between adult participants with and without a history of familial violence. That is, history of childhood familial violence does not appear to be significantly related to adult depressive symptoms in the current participant sample.

As a follow up analysis, a one-way ANOVA was conducted to determine whether depression scores (both transformed and non-transformed) differed between adults with a history of exclusively physical violence, exclusively non-physical violence, and/or no history of violence. Results of the analyses revealed no significant difference across the three participant
subgroups using either non-transformed CES-D total variable \( (F [2, 58] = 0.39, p > .05) \) or transformed variable \( (F [2, 58] = 0.48, p > .05) \). There does not appear to be a significant relationship between childhood exposure to familial violence and adult depressive symptoms in the current sample. It was predicted that participants reporting solely physical forms of violence would report more depressive symptoms than participants reporting solely non-physical violence. Although this general pattern was observed across subgroup means, (Physical Violence \( M = 34.25, SD = 6.52 \); Non-physical violence \( M = 32.40, SD = 8.12 \)), the result was not statistically significant.

*Overgeneral Memory*

Due to technical difficulties during administration of the Autobiographical Memory Test (AMT), portions of audio recordings for 7 out of 62 participants (11.29%) were inaudible and thus unable to be scored. Therefore, ratios were calculated based on the AMT, effectively prorating the incomplete data. Table 6 details means and standard deviations for the proportions of both specific and overgeneral (categorical and extended) memories related by all participants in the current sample. Ratios in table 6 are grouped according to participants’ retrospective familial violence history subgroups (none, non-physical, and physical violence).

Sequential data transformations were implemented based on the distributions of each memory ratio, however no transformation was successful in improving normality as tested by the Shapiro-Wilk value. Therefore, the following parametric statistics utilize non-transformed, non-normal memory ratio variables. An independent samples \( t \)-test was conducted to investigate the a priori research hypothesis that participants endorsing a history of familial violence will recall more overgeneral memories (OGMs) than participants with no violence history. The analysis revealed no significant differences, however, in OGM recall rates between participants with and
without a history of family violence \((t [59] = 0.39, p > .05)\). Therefore, childhood familial violence does not appear to be significantly related to adulthood OGM proclivity in the present participant sample. Similar independent samples \(t\)-tests were executed using ratios comprised of solely neutral, negatively-, and positively-valenced AMT cue words. No statistically significant differences were found, however.

As a follow up analysis, a one-way ANOVA was conducted to investigate whether OGM rates differed between adults with a history of exclusively physical violence, exclusively non-physical violence, and/or no history of violence. Results of the analyses revealed no significant differences across participant groups \((F [2, 58] = 0.18, p > .05)\). These findings are contrary to that predicted by the third primary a priori research hypothesis.

Given the non-normality of the AMT ratio distributions and non-significance of parametric analyses, supplementary non-parametric analyses are detailed in Table 7. Comparative case examples are provided detailing three individual participant’s retrospective memories of personal familial violence encounters. One case example is provided to illustrate each of the three memory subtypes (overgeneral-extended, overgeneral-categorical, and non-overgeneral/specific). To protect participant confidentiality, details of all memories have been altered.

**Physiological Arousal – Galvanic Skin Response**

Means and standard deviations of participants’ galvanic skin response (GSR) activity by AMT word valence (neutral, positive, or negative) are reported in Table 8. Each of the three GSR means was found to satisfy normality requirements for parametric analyses via the Shapiro-Wilk normality test. Therefore, several parametric independent samples \(t\)-tests were conducted to test the a priori research hypothesis that adults with a familial violence history would display
more physiological arousal, as measured by GSR, than adults without violence history. Non-transformed GSR variables utilized included the mean GSR activity for each individual AMT cue word as well as GSR activity for words grouped by emotional valence (neutral, positive, and negative). These analyses revealed no significant differences ($t [57] = 0.23, p > .05$).

As a follow up analysis, a one-way ANOVA was employed next to test whether physiological arousal as measured by GSR activity differs across participants with a history of exclusively physical violence, exclusively non-physical violence, and/or those with no violence history. Again, no statistically significant differences were found ($F [2, 57] = 0.19, p > .05$). These findings are contrary to the fourth primary a priori research hypothesis.

Predictive Analyses

*Predicting Adult Psychological Functioning Based on Familial Violence History*

Multiple regression analyses were conducted to assess the contribution of each subtype of familial violence (CPA, CSA, CEV, psychological maltreatment, and neglect) to the two indicators of adult psychological distress (PTSD and depression). In the first step, the variable of age was entered, as it was found to be significantly correlated with CSA. In the second step, non-transformed raw totals for each of the five subtypes of family violence were entered. In predicting IES-R total scores the regression equation generated was non-significant ($F (6, 54) = 1.87, p > .05$) with an $R^2$ of .17.

A similar analysis was then conducted using binary (rather than raw total) CCMS-A subscale scores (*yes* or *no* for each subtype of family violence) for each subtype of family violence utilized as the predictors. This analysis yielded a significant regression equation, $\beta = 0.36; (F [6, 54] = 2.20, p < .05$) with an $R^2$ of .20 (See Table 9). Psychological violence
accounted for the most unique variation in PTSD symptoms, as compared to the four other violence subtypes.

Next, a similar regression was conducted using the outcome variable of CES-D total score indicating adult depressive symptoms. As in the regression analysis conducted previously, raw total scores for each of the five violence subscales on the CCMS-A were utilized. In the first step, the variable age was entered, as it was found to be significantly correlated with CSA. In the second step, raw totals for each of the five subtypes of familial violence were entered. The regression equation generated was non-significant ($F (6, 54) = 0.34, p > .05$) with an $R^2$ of .036. A second regression was then implemented utilizing the transformed raw CCMS-A psychological violence subtotal as well as the transformed CES-D outcome variable. A non-significant equation resulted ($F (6, 54) = 0.70, p > .05$).

A similar analysis was then conducted using binary CCMS-A subscale scores as the predictor variable (‘Yes’ or ‘No’ for each subtype of family violence). The regression equation generated based on these analyses was non-significant ($F [6, 54] = 0.06, p > .05$), with an $R^2$ of .006. Utilizing the transformed CES-D total score as the outcome variable yielded a similarly non-significant result ($F [6, 54] = 0.27, p > .05$). These results indicate that there is no familial violence subtype that is significantly predictive of adult depressive symptoms in the current sample.

**Predicting OGM Based on Familial Violence History**

A multiple regression analysis was conducted to assess the contribution of each type of family violence to proclivity toward OGM. As conducted previously, non-transformed raw total scores for each of the five violence subscales on the CCMS-A were utilized. In the first step, the variable age was entered, as it was found to be significantly correlated with CSA. In the second
step, non-transformed raw totals for each of the five subtypes of familial violence were entered. The regression equation was not significant \( (F [6, 54] = 0.36, p > .05) \), with an \( R^2 \) of .038. The same analysis was then conducted using binary CCMS-A subscale scores as the predictors \((yes\ or\ no\ for\ each\ subtype\ of\ family\ violence)\). The regression equation was not significant, however, \( (F [6, 54] = 0.47, p > .05) \), with an \( R^2 \) of .049. These results indicate that there is no familial violence subtype that is significantly predictive of adult OGM proclivity in the current sample.

**Moderators and Mediators**

Two a priori research hypotheses were aimed at investigating moderator and mediator effects on adult outcome variables of PTSD and depressive symptoms. Family-of-origin income was predicted to function as a moderator between childhood violence exposure and adult psychological distress, while social support was predicted to function as a mediating variable. Hierarchical multiple regression analyses were employed to investigate both moderator and mediator effects.

The proportion of variance in adult PTSD symptom scores accounted for by social support over and above familial violence exposure was initially analyzed using the standardized IES-R total score as the dependent variable. Social support was first quantified by summing the total number of positive social supports listed on the demographic survey. All relevant variables were then standardized and centered. A new variable cross product of social support total x CCMS-A total was then computed.

Hierarchical regression of two predictor variables (social support and family violence history) on the criterion variable (total PTSD symptoms) was implemented in three steps: 1) the standardized CCMS-A total variable was entered, 2) the standardized social support total variable was entered, and lastly, 3) the cross product of the two predictor variables was entered.
The regression equations generated revealed a main effect for family violence history ($F[1, 59] = 6.54, p = .013; R^2 = .10$). The addition of social support ($R^2$ change = .03), and the cross-product ($R^2$ change = .01), contributed a negligible non-significant amount to the variance accounted for in adult PTSD symptoms. Therefore, family violence exposure contributes 10% of the variance in adult PTSD symptoms, and social support does not function as a moderator between childhood violence exposure and adult PTSD in the current sample.

A second hierarchical regression was implemented analyzing social support as a potential predictor variable, this time using the standardized version of inverse transformed CES-D total score as the criterion variable. Results of the analyses revealed non-significant regression equations for both predictor variables of family violence exposure ($F[1, 59] = 2.37, p > .05$) and social support ($F[2, 58] = 1.82, p > .05$). Similarly, a non-significant interaction term equation resulted ($F[3, 57] = 1.21, p > .05$).

The proportion of variance accounted for by family-of-origin income over and above familial violence exposure was analyzed first using the standardized IES-R total score as the criterion variable. A hierarchical regression was implemented analyzing family-of-origin income as a potential moderating variable on adult PTSD symptoms as measured by the IES-R total score. Results of the analyses revealed non-significant regression equations for both independent predictor variables family violence exposure ($F[1, 54] = 3.48, p > .05$) as well as family-of-origin income ($F[2, 53] = 2.33, p > .05$). Similarly, a non-significant interaction term equation resulted ($F[3, 52] = 2.26, p > .05$).

A final a priori hypothesis based hierarchical regression was implemented analyzing family-of-origin income as a potential moderating variable, this time using the standardized version of inverse transformed CES-D total score as the criterion variable. Results of the
analyses revealed non-significant regression equations for both independent predictor variables family violence exposure \((F [1, 54] = 1.70, p > .05)\) as well as family-of-origin income \((F [2, 53] = 1.28, p > .05)\). Similarly, a non-significant interaction term equation resulted \((F [3, 52] = 0.87, p > .05)\).

In an effort to maintain analytical consistency with related studies, gender was investigated next as a potential moderating variable. This analysis was first conducted via two simple linear regressions conducted separately for males and females, looking at the contribution of childhood violence exposure to variance in adult PTSD symptoms. For females in the sample, familial violence history accounted for 4.3% of variance in adult PTSD symptoms \((F [1, 38] = 1.70, p > .05)\). For males, however, familial violence history accounted for a surprisingly high 26% of variance in adult PTSD symptoms \((F [1, 19] = 6.67, p < .05)\).

A hierarchical regression analysis was implemented next as an in-depth follow up to the previous finding. First the variable of gender was dummy coded and standardized. Next a cross product interaction variable was created utilizing standardized gender x standardized CCMS-A total scores. A hierarchical regression was implemented testing gender as a potential moderating variable on the effect of familial violence exposure to adult PTSD symptoms. Results of the analysis revealed two significant main effects for family violence exposure \((F [1, 59] = 6.54, p = .01; R^2 = .10)\) as well as gender \((F [2, 58] = 3.36, p = .04; R^2 = .104)\). In this equation the addition of the gender variable resulted in a minute change in the amount of PTSD symptom variance accounted for beyond variance due to familial violence exposure. The equation generated based on the interaction effect was found to be non-significant, however \((F [3, 57] = 2.32, p > .05)\).

A second hierarchical regression was implemented testing gender as a potential moderating variable on the effect of familial violence exposure to adult depressive symptoms.
Results of the analyses revealed non-significant regression equations for both independent predictor variables of family violence exposure ($F[1, 59] = 2.37, p > .05$) as well as gender ($F[2, 58] = 1.27, p > .05$). Similarly, a non-significant interaction term equation resulted ($F[3, 57] = 0.84, p > .05$).
CHAPTER 4

DISCUSSION

The purpose of the present study was to assess long-term outcomes of childhood exposure to familial violence. To date multiple lines of research have demonstrated that children exposed to family violence are at increased risk for psychological difficulties in adulthood (Silvern et al., 1995; Roth et al., 1997; Courtois, 2004). These difficulties have included posttraumatic stress disorder, depression, decreased self-esteem, and chronic anxiety. Overall, the present study aimed to investigate childhood violence exposure and its relations to adult psychological difficulties. To that aim, an adult college sample was utilized, of whom over 65% retrospectively endorsed at least some history of violence in their family of origin.

Significant differences were found between participants with and without family violence history. Individuals who endorsed a history of childhood sexual abuse (CSA) were on average older than those who did not endorse CSA. Several potential explanations exist for this outcome. One possibility involves variation in willingness to disclose childhood sexual violence. Past research has demonstrated that when the sexual abuse perpetrator is a family member, older individuals are more likely to self-disclose regarding the abuse than younger individuals (Ruggiero et al., 2004). Unfortunately, disclosing later in life has also been linked to an increased incidence of posttraumatic stress disorder (PTSD) (Ruggiero et al., 2004). Roth et al. (1997) has substantiated this link between childhood sexual abuse and adult posttraumatic stress disorder. PTSD symptoms in and of themselves may reduce disclosure of abuse history, given that a hallmark PTSD characteristic is avoidance of trauma-related information and stimuli (DSM- IV-TR; American Psychiatric Association, 2000). Young adults may be more prone than older adults
to withhold their abuse history due to feelings of shame and perhaps even denial of their traumatic past (Roth et al., 1997; Ruggiero et al., 2004). CSA tends to trigger feelings of guilt and self-blame in victims, particularly when they are very young at the time of their abuse. Social stigma surrounding this type of abuse may also be a primary factor in younger participants’ withholding of this information (Kolander, Ballard, & Chandler, 2008). If, in fact, young adults are less likely than older adults to disclose CSA, they may also underreport current psychological symptoms of depression and PTSD. This possibility would contribute to the overall skew of data toward non-pathology found in the current sample, a large majority of whom ($n = 49; 80.3\%$) are age 22 or younger. If underreporting of pathology is common in the present sample, the ability of the current analyses to support this study’s a priori hypotheses was likely hindered.

Individuals reporting a history of CSA also reported lower family-of-origin annual incomes, on average, than individuals without a history of sexual abuse. This result may reflect the traditionally higher incidence of abuse in families of lower socioeconomic status (Henning et al., 1996; Kolbo, 1996). Past research shows that lack of financial resources in families is typically related to higher stress which may contribute to increased rates of familial violence (Kolander, Ballard, & Chandler, 2008). Both of these factors, low family-of-origin income and history of CSA, are clearly linked to adult adjustment difficulties (Slivern et al., 1995). Might these adjustment difficulties in turn delay individuals in seeking post-secondary education? If this is the case, one would expect that individuals reporting CSA would enter college later than those with no CSA history. Indeed, individuals in the present sample reporting CSA were significantly older ($M = 22.80, SD = 9.75$) upon entry to college than those with no CSA history
\( M = 18.56, SD = 2.76; t \left[ 58 \right] = 2.66, p < .01 \). Delay in college entry may be one example of the myriad of negative consequences resulting from CSA exposure.

No other demographic factors, including ethnicity, significantly varied between participants with and without violence history. This finding is somewhat surprising, as previous researchers have referred to increased rates of familial violence in racial/ethnic minority families (Davies, DiLillo, & Martinez, 2004). This outcome may be a factor of the relatively small sample size \( n = 62 \). However, slightly more than half of the participants (50.8%) were from an ethnic-minority (i.e. non-Caucasian) background.

Adult Psychological Functioning

The primary hypothesis of the current study was that individuals endorsing a history of family violence during childhood would have more psychological difficulties during adulthood than those without a history of family violence. For the purposes of the current study, psychological difficulties are operationalized as PTSD symptoms and depressive symptoms.

**PTSD Symptoms**

Theorists have linked violence exposure primarily to posttraumatic stress disorder symptoms of avoidance; individuals who experience violence typically avoid any reminder of their trauma which often appears as an intrusive thought (nightmares are frequently reported). Avoidance of trauma-related stimuli may then lead to a counterintuitive hypervigilance reaction wherein individuals become oversensitive to environmental factors serving as trauma reminders.
Therefore, PTSD symptoms of avoidance, hyperarousal, and intrusions were assessed individually, along with one total PTSD symptom score, in the current study. Both PTSD-related avoidance and intrusion symptoms were significantly elevated in participants reporting familial violence. This finding is in support of the primary hypothesis that individuals exposed to violence during childhood will experience more PTSD-related symptoms during adulthood. This outcome is commensurate with several previous studies which linked childhood violence exposure to increased PTSD symptomatology in adulthood (Roth et al., 1997; Courtois, 2004; Diamond and Muller, 2004). This finding is also noteworthy as it was demonstrated in a non-clinical sample, whereas the majority of the previous research has utilized shelter or inpatient samples.

Participants endorsing solely physical familial violence (child physical abuse [CPA] and/or child sexual abuse [CSA]) reported more PTSD symptoms overall, and more avoidance symptoms in particular, than either participants with no violence history or those with solely non-physical violence history. Neither hyperarousal nor intrusion-related PTSD symptoms were elevated among adult victim survivors. This outcome stands in contrast to the findings of Griffing et al. (2006), who demonstrated increased rates of intrusion and hyperarousal PTSD symptoms in a shelter sample. That the current sample was non-clinical may have influenced the differential PTSD symptom presentation. Griffing et al. (2006) actually hypothesized that PTSD-related avoidance may be indicative of a more severe course of PTSD experienced as the result of direct physical abuse. Their conjecture is consistent with the findings in the current study and may contribute to efforts aimed at linking certain types of abuse to specific outcomes.

These findings also expound on previous studies by pointing to the increased mental health risk associated with physical forms of childhood violence over and above risk linked to
non-physical forms of violence. Pelcovitz et al. (2000) demonstrated that adolescents reporting CPA and childhood exposure to violence (CEV) had a higher risk of experiencing anxiety and depression relative to those with CEV history exclusively. Roth et al. (1997) hypothesized that physical forms of abuse, specifically CPA and CSA, might increase risk for adult adjustment difficulties as they share the characteristic traits of physical danger to self and physical captivity, both of which involve boundary violations and intrusiveness. At a basic level, physical abuse may be more damaging than non-physical abuse as it typically involves visual evidence of the abuse – in the form of bruises or other physical trauma indicators – which contributes to shame and social stigma. Physically abused children must endure the devastating emotional impact as well as the compounding factors of physical pain and injury, consequences of which may last into adulthood. Chronic physical abuse in childhood has been linked to adult neurological damage, hearing loss, head trauma, and recurrent pain (Pelcovitz et al., 2000). Furthermore, the experience of physical pain may induce mortality salience in the victim. Mortality salience is defined as the knowledge of one’s impending death. Research has shown that in the face of impending mortality, individuals tend to rally the support of in-groups, that is, groups of which they are members and towards which they feel loyalty and trust (Harmon-Jones, Greenberg, Solomon, & Simon, 1996). Many physically abused children do not have the benefit of in-group membership security, however, as their family, or would be in-group, is the very source of fear and abuse. Recurrent abuse may equate to continual reminders of mortality, which presents a chronic stressor for the victim.

**Gender Differences**

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Several previous lines of family violence research (Kolbo, 1996; Jankowski et al., 1999; Moretti et al., 2006) have studied gender roles and differences across genders in adult survivors of familial violence. A statistically significant main effect was found for gender in predicting adult PTSD when participants were grouped by subtype of violence experienced (none, non-physical, and physical). Two interesting gender-based trends were exhibited among participant subgroups. For females in the sample, familial violence history accounted for 4.3% of variance in adult PTSD symptoms, whereas for males, familial violence history accounted for a considerably higher 26% of variance in adult PTSD symptoms. This gender difference may be a function of the gender of the violence aggressor or perpetrator. In the majority of families experiencing violence, an adult male is typically the aggressor (Higgins & McCabe, 1999). From a social-modeling perspective it seems logical that young boys, who readily identify with their same-sex parent, are more adversely affected by male-perpetrated violence than young girls (Moretti et al., 2006). Some have attributed the cyclic nature of familial violence as being modeled from father to son, and so on through subsequent generations (Jankowski et al., 1999). Jankowski et al. (1999) provided empirical support for the same-sex modeling theory by showing that CEV involving a same-sex parent perpetrator was linked to an increased risk for future violence perpetration on the part of the witness; this finding held true across a large sample ($n = 1576$) of both male and female undergraduates.

A second gender-based trend was exhibited in the current study. Males reporting physical violence during childhood endorsed more PTSD-related symptoms as adults than males who experienced non-physical violence. The reverse was true for female participants, however, with those reporting non-physical violence having a higher PTSD total score than those with a history of physical violence. This indicates that, for male participants, physical violence may be
considered more distressing than non-physical violence, whereas the opposite may be true of females.

This finding is similar to Davies, DiLillo, and Martinez (2004) who assessed adult outcomes in a female Latina sample exposed to familial violence. They found a non-physical form of violence (CEV) was more predictive of adult female distress than physical forms of child maltreatment (Davies, DiLillo, & Martinez, 2004). Another study of adult females exposed to family violence as children (Feerick & Haugaard, 1999) demonstrated yet a different result. Increased PTSD scores were linked to both direct physical (CPA) and non-physical (CEV) violence. It is clear based on reviewing these and other similar studies that linking specific types of abuse to certain outcomes is complicated, as singular forms of abuse rarely occur (Higgins & McCabe, 2000). It is more often the case that multiple forms of abuse co-occur, making teasing out effects due to one form or another complex. Therefore, it may be problematic to attempt to link certain types of abuse to specific psychological outcomes (Higgins & McCabe, 2001). Feerick and Haugaard (1999) go on to suggest that many of the effects of childhood exposure to violence are likely attributable to these co-occurring types of abuse. Indeed, cumulative effects of multiple types of abuse appear to play a large role in adult psychological outcomes.

Overall, in the current sample it appears that non-physical abuse (CEV, neglect, and psychological abuse) is most predictive of female adult psychopathology, whereas physical abuse (CPA and CSA) is most predictive of male adult pathology. This gender-based finding is well-suited to interpretation at a biological level. Males, by virtue of their increased levels of testosterone, may be more negatively affected by physical threats than females. Indeed, previous research has linked the hormone testosterone to early development of rough physical play in
boys, with an emphasis placed on dominant and aggressive behavior (Taylor et al., 2000) over and above that displayed by females.

Biological research has demonstrated that under times of stress, males typically revert to a physical fight-or-flight response (Taylor et al., 2000; Kolander, Ballard, & Chandler, 2008). Recent research, however, shows that females may display a seemingly opposite reaction. When distressed, females are more likely to engage in a tend-and-befriend response, in which they affiliate and ally with others (Taylor et al., 2000). This tendency is thought to be biologically based, as it facilitates successful rearing of offspring. It follows, then, that males are more adversely affected by physical, or psychological, abuse. Males may consider a physical threat to be more damaging than a non-physical threat. Females however may be more adversely affected by psychological abuse – a type of abuse that tends to worsen over time and often involves a meaningful relationship. This may be especially damaging to females who are likely to base their sense of self on the quality of their relationships with others (Kolander, Ballard, & Chandler, 2008). For these reasons, neglect and emotional abuse may be more damaging to the female gender role than to male gender roles, which traditionally place less importance on emotional support.

Both male and female participants with a history of family violence reported significantly more avoidance symptoms than participants with no history of violence. Individuals who avoid reminders of past trauma and cognitions about those events may be less likely to have trauma-related intrusive thoughts or hyperarousal in the short-term (Sternberg et al, 2006). Long-term use of avoidance as a coping method, however, may actually increase risk for psychopathology and maladjustment, namely depression (Silvern et al., 1995; Hauer, Wessel, & Merckelbach, 2006). Therefore, self-reports of depressive symptoms were explored next.
Depressive Symptoms

Past researchers have argued that coping by avoidance may, in and of itself, promote depression in individuals with a history of violence (Hauer, Wessel, & Merckelbach, 2006). Ironically, avoidance may lead to ongoing rumination in the long-run, particularly when individuals suppress the cognitions and emotions necessary to sufficiently process and deal with their traumatic past (Silvern et al., 1995). In the current sample, however, individuals who experienced violence during childhood did not report increased rates of depressive symptoms as compared to those without a violence history.

This finding is contrary to previous research that has found increased rates of depressive symptoms in college students who experienced violence during their childhood (Pelcovitz et al., 2000; Silvern et al., 1995). Some researchers have argued that utilizing a college-aged sample may be problematic simply because young adult students are not yet old enough to exhibit symptoms of anxiety or depression (Rind, Tromovitch, & Bauserman, 1998). Indeed, research has identified the mid- to late-20’s as a high risk period for precipitation of psychological maladjustment (DSM- IV-TR; American Psychiatric Association, 2000). For many students, this translates to post-graduation presentation of mental health problems. Alternatively, it may be that highly depressed or anxious individuals are under-represented in this sample simply because they are less likely to enter college than moderately- or non-depressed individuals (Rind et al., 1998). That is to say that the current sample may represent a higher-functioning portion of the general population than would a random sample drawn from the community at large. It may be that college students are better able to cope with external stressors relative to individuals who do not attend college (Rind et al., 1998).
Methodological factors may provide an alternative explanation of the low incidence of depressive symptoms in the present study. In a longitudinal study aimed at evaluating the clinical utility of the CES-D, an overall floor effect was observed for 157 participants with a diagnosis of Rheumatoid Arthritis (RA), with a majority of scores tending to fall at the lower end of the total scale (Covic, Pallant, Conaghan, & Tennant, 2007). Participants with RA were selected as this disorder has a substantiated link with depressive symptoms; each was administered the CES-D at three discrete intervals over a one-year period. That the CES-D exhibited a floor effect for a sample with an established depressive baseline points to the overall low sensitivity of the measure.

Given that the CES-D is structured to assess current depressive symptoms, instructions ask the participant to respond based on the previous week. One week may be an overly restrictive time-frame for its use as an outcome variable associated with prior trauma. Perhaps the number of depressive symptoms reported would increase with a one-month or half-year time frame of reference. Furthermore, a key symptom of depression, that of lack of insight into one’s own difficulties, may be at work. Depressed individuals often have difficulties recognizing and distinguishing their own affective states (DSM- IV-TR; American Psychiatric Association, 2000). A depressed individual may therefore be unaware of the pervasiveness or severity of their symptoms, and how these adversely affect their everyday functioning. Therefore, self-report measures of depression may be less revealing than other forms of assessment such as collateral reports or behavioral indicators.

In sum, based on the current findings as related to adult psychological functioning, adults who were exposed to violence before the age of 13 reported significantly more PTSD-related symptoms than those without a history of violence exposure. Specifically, individuals reported
more PTSD-related avoidance, whereas rates of hyperarousal and intrusive thoughts were not different across participant subgroups. Finally, individuals with a history of violence exposure were no more likely to endorse depressive symptoms than those without a family violence history.

*Overgeneral Memory*

The theory of overgeneral memory was also explored, as previous research has linked overgeneral memories (OGMs) to both depressive and PTSD symptoms (Hauer, Wessel, & Merckelbach, 2006). For individuals with a history of familial violence, recalling specific events from childhood may elicit uncomfortable emotional and/or physical arousal. Individuals may avoid this arousal by recalling only nonspecific, or overgeneral, memories (Schonfeld & Ehlers, 2006). This OGM recall tendency has been exhibited in both depressed individuals and those with PTSD, therefore the current study assessed both OGMs (via autobiographical memory recall) and physiological arousal (via GSR) in all participants. Participants did not vary, however, in either OGM recall or physiological arousal as related to childhood violence exposure history. That is, participants endorsing a history of family violence were no more likely to recall OGMs than participants without a violence history, and there were no significant differences in physiological arousal across participant groups.

This outcome differs from that demonstrated by Greenhoot, McCloskey, and Glisky (2005) who found that, after a six-year delay, participants with violence histories left out significant details and related OGMs more than those without violence histories. There was consistency between the current finding and those from a previous study of OGM recall by Williams et al. (1996). They found a higher incidence of categoric memories than extended
memories. The average number of categorical memories related in the current sample was 9, whereas the average number of extended memories was 7. This may be because categorical memories are repetitive by definition, occurring more than once, which may increase their retention in long-term memory. This differs from extended memories which are defined as one-time events lasting more than one day in duration.

There are several potential explanations for the lack of significant differences in OGM recall and physiological arousal among participant groups. Theorists have argued that OGM is a learned cognitive style utilized in an attempt to decrease arousal, and have identified a link between OGM, depression, and PTSD. (Williams et al., 1996; Kuyken, Howell, & Dalgleish, 2006). If we consider OGM to be a strictly depression-linked phenomena, as hypothesized by Kuyken, Howell, and Dalgleish (2006), the outcome of the current study is consistent with previous outcomes. That is, if OGM is related solely to incidence of depression, and not to PTSD, it would make sense that the current non-depressed sample does not show an OGM proclivity. Still, this finding differs from Hauer, Wessel, and Merckelbach (2006) who demonstrated a link between PTSD-related avoidance and OGM, as the current sample displayed avoidance without a co-occurring OGM tendency. A major aim of this study was contributing to the discrepant findings regarding OGM, PTSD, and depression. Based on these outcomes, the present study finds no link between OGM and PTSD; the potential link between OGM and depression cannot be discredited by the current study, however, as there was no incidence of depression in the sample.

An alternative explanation for the lack of physiological arousal in the present study involves a methodological interpretation. These results may reflect the current study design in which participants were segregated to an individual data collection room throughout the memory
task in an effort to facilitate candid responding. Previous studies have utilized a one-on-one format during memory tasks, wherein one researcher directly asks the respondent for childhood recollections (Williams & Broadbent, 1986; van Vreeswijk & de Wilde, 2003; Greenhoot, McCloskey, and Glisky, 2005). The current study relied on a computerized Autobiographical Memory Test (AMT), thus removing the researcher facilitator. This design may reduce subject arousal in a way that previous studies did not, as participants were in a private room during the AMT. That is to say, the current sample may have experienced less physiological arousal upon reporting otherwise stressful memories simply because they were alone throughout the task.

Still another explanation for the lack of physiological arousal differences may lie in the use of galvanic skin response (GSR) as the sole physiological arousal indicator. Over time, GSR technology has been gradually accompanied, or replaced, by more advanced physiological measurements including electroencephalogram (EEG) and visual response eye-movement indicators (Crider et al, 2004). For example, in their study on arousal in response to trauma-relevant stimuli, Elsesser, Sartory, and Tackenberg (2004) utilized electrocardiogram measurements in addition to skin conductance, or GSR, measurements. The current study may have benefitted from EEG as a supplementary physiological indicator of physiological arousal.

We must also consider the alternative explanation that, in reality, there is no factual link between OGM, physiological arousal, and trauma history. Cognitive psychologists have purported a wealth of theories explaining the memory processes underlying consolidation of benign versus traumatic memories. Generally speaking, two primary schools of thought have emerged on the topic, those that view OGMs as: 1) a pathological, avoidant process wherein traumatic memories are overgeneralized in an effort to reduce concomitant arousal, and 2) a non-pathological, normative memory consolidation process occurring across all memory types.
Past research has also considered differences in willingness or ability to report violence history as one primary factor underlying differences in OGM reporting rates (Schoenfeld & Ehlers, 2006). That is, can OGMs be explained as simple non-intentional forgetting, an overt unwillingness to share violence history, or are they indicative of a more meaningful trauma-specific amnesic memory consolidation processes?

Research has emerged that detracts from the trauma-specific amnesic memory theory; specifically, individuals have demonstrated complete forgetting of both benign (non-traumatic) events and traumatic events occurring in their past (Greenhoot, McCloskey, & Glisky, 2005). This finding would support consolidation of both benign and traumatic memories as a normative, non-pathological innate memory process. Based on this interpretation, OGMs would not be reflective of a trauma-specific mechanism. If this is the case, OGMs would not be demonstrated exclusively in the presence of pathology, but across both well-adjusted and maladjusted adults. This interpretation would explain the lack of differences in OGM recall tendencies and physiological arousal across participant subgroups in the present sample. If this explanation were accurate, OGM recall would not, in and of itself, be demonstrative of pathology. Accordingly, OGM recall tendencies would not be a determinant in identifying adult maladjustment.

Clinical Implications

The accurate identification, and effective treatment, of adult maladjustment are two primary goals in clinical practice today. A secondary but related clinical goal is the ability to forecast future functioning; toward that aim, each type of family violence was assessed for its unique contribution to the variance in both PTSD and depression. Overall, PTSD symptoms were best-predicted by history of psychological abuse, which contributed 18% of variance to total
PTSD. Overall, it appears that childhood abuse history, specifically psychological abuse, was a marginally successful predictive factor of adult PTSD symptoms. Beyond this, however, participants’ history of exposure to family abuse was widely non-predictive of current functioning.

Based on the current outcome, PTSD-related avoidance appears to be indicative of a severe trauma reaction, particularly when physical violence is a factor. This outcome is important in that those suffering from severe PTSD may not actively seek help due to the avoidance associated with their disorder. A major clinical implication of this finding rests in researchers’ efforts to increase emphasis on preventative efforts targeting high-risk PTSD groups (for example, veterans and single mothers). Bolstered efforts should also be aimed at providing psychoeducational instruction regarding stress-reduction techniques, PTSD symptom management, and treatment resources available to individuals with a high risk of violence exposure. Decreasing social stigma by talking openly about the high incidence of familial violence may also go a long way by indirectly promoting victims’ help-seeking behavior via normalization and shame reduction.

Several key points regarding CSA and related retrospective reporting were elucidated based on the current study. It was demonstrated that CSA occurs (or is reported) more frequently in low-income families; additionally, CSA survivors are typically older upon college entry compared to controls. Clinical implications of these findings may inform early intervention techniques which should be targeted at low-income families. That these individuals are entering college later points to the importance of continued assistance at an educational level. College recruitment efforts and/or scholarship opportunities may be targeted specifically at adult
survivors of various childhood setbacks (including CSA) to counteract this trend of delayed college enrollment.

Once in treatment, individuals with familial violence histories, especially those reporting CSA, are likely to exhibit some subset of PTSD symptoms, if not at a clinically diagnosable level. Indeed the current study shows that this form of pathology is not unique to inpatient samples, as elevated PTSD symptoms were found in a college adult sample. This lends credence to the pervasiveness of PTSD and violence exposure history across individuals of all educational levels. Due to the potential severity of PTSD symptoms, and the debilitating impact this specific symptomatology can have on daily functioning, past researchers have advocated the use of anti-depressant medications, specifically SSRIs, during initial PTSD treatment phases (Cooper, Carty, & Creamer, 2005). This often allows for the management of symptoms and enables the PTSD-sufferer to regain aspects of daily life (regular sleeping, reduced anxiety) that are critical prior to engaging in more in-depth process oriented treatment (Cooper, Carty, & Creamer, 2005).

In her article on trauma as the result of familial violence, Courtois (2004) details three stages of treatment for use with PTSD. Stage 1 consists of pretreatment issues including diagnosis and assessment, setting a treatment frame, alliance-building, affect regulation, stabilization, skill-building, and self-care. Some recommendations relevant to Stage 1 of Courtois (2004) treatment plan are warranted based on the current findings. When screening for disorders of which low insight or avoidance are a hallmark symptom, such as depression and PTSD, it would be beneficial to augment traditional self-report measures with collateral third-party reports or behavioral observations. The relatively low-incidence of pathology in the current non-clinical sample may be an artifact of relying solely on self-report measures – clinicians would be wise to avoid this pitfall during Stage 1 of treatment. The affect regulation component
of Stage 1 may also entail psychopharmaceutical aids as necessary to ensure symptom management and affective stabilization (Cooper, Carty, & Creamer, 2005).

Stage 2 of Courtois’ (2004) recommended PTSD treatment involves deconditioning, mourning, resolution, and integration of the trauma. Effectively, clients must disentangle memories and create new meanings for past trauma experiences. Expressive writing is but one empirically-supported method of achieving this goal (Pennebaker, 2001). Prior to engaging in this challenging second stage, clients must regain daily functioning and reduce acute distress. For many adults with a history of childhood trauma, the mourning and resolution stages are left unresolved and will require working through in the realm of an empathic therapeutic alliance (Curtois, 2004). This process may be further complicated by the avoidance and denial which frequently co-occurs with PTSD and depression. Clinicians should focus on supporting their clients in exploring the meanings and associations of past trauma experiences as a means of reducing distress. One empirically-supported technique for fostering this working through is explored next.

Pennebaker (2001) has pioneered groundbreaking research into expressive writing as means of reducing pathology via cognitive reintegration, which is the reconceptualization of past trauma to coexist within a cohesive, non-damaged self-view. Expressive writing is one example of a memory relations technique, the format of which is similar to the AMT. In fact, early versions of the AMT actually called for a written (rather than verbal) account of the memory, which equated to an expressive writing task in many ways (Schoenfeld & Ehlers, 2006). Research suggests that writing about traumatic memories allows for the expression of negative stress-related emotions which in turn improves psychological health. Critics of expressive writing and memory relations techniques point to the potential for re-exposure and resulting re-
traumatization as a hazard of these techniques. That the current sample did not display increased physiological arousal during the AMT task may detract from this criticism of memory relations techniques.

The third and final stage of Courtois’ (2004) recommended PTSD treatment involves self and relational development and enhanced daily living – both of these goals are encouraged as a means of ensuring post-treatment success. This includes a focus on relationship establishment and growth, independent skill development, and making career and school decisions. For individuals who have lived with trauma and psychological distress through much of their lives, this final stage may be especially challenging (Courtois, 2004). Based on the current findings, other risk factors for continued success post-treatment have been identified. These include individuals with a history of multiple forms of maltreatment, who will likely struggle more than those with histories of singular forms of abuse. Other risk factors elucidated by the current findings include history of physical abuse (especially CSA), exposure to a same-sex parent perpetrator (particularly for young males), and a high incidence of avoidance symptoms. CSA history in particular may present a challenge in development of educational skills, as a link has been demonstrated between CSA and delayed college entry. Working with adult males reared in homes with a male violence perpetrator is likely to present the specific challenge of generational violence transmission. Finally, a high incidence of avoidance symptoms is a key risk factor that must be dealt with at each stage of the treatment process, as well as post-treatment recovery phases.

Research Limitations

Several limitations may be noted in the current study. First, the current study would have benefitted from utilization of more sensitive data collection methods. The sole use of self-report
measures is problematic, particularly when assessing psychological difficulties, as participant insight may be compromised due to pathology. Given that specific questions regarding history of abuse were included, reporting may have been more candid if alternate, more private, forms of data collection were utilized (for instance, allowing participants to respond electronically rather than in paper-and-pencil format). Alternative methods of data collection may include third-party collateral reports, in-laboratory behavioral observations, or retrospective data collected from caregivers. Data of this sort would allow for more explicit reporting of participants’ symptoms.

Secondly, as is the case in the majority of psychological research, the current study would benefit from a more generalizable participant pool. Recruiting from the community at large would result in more externally valid results. Ideally, a more generalizable participant pool would include individuals of various ages, not solely young adults as is typically the case in a college sample. Relatedly, the current sample was asked only about violence experienced prior to the age of 13. The current design did not allow for reporting of trauma experienced after this age, therefore it was impossible to control for trauma that occurred post-childhood. For this reason, adult PTSD symptoms cannot be definitively linked exclusively to childhood experiences, as symptoms may be due to trauma occurring later in life. It may be feasible that individuals reporting elevated PTSD symptoms have experienced trauma more recently which is exacerbating their symptoms. This is another limitation of the current study.

Another set of limitations of the current study involves aspects of administering the AMT. Due to technological difficulties, portions of several participants’ audio recordings were inaudible and therefore unable to be coded. A more thorough technological procedural check protocol, implemented prior to and during the data collection phase, may have minimized this source of error. Finally, the study design during the AMT procedure would benefit by being
altered to include an experimenter demand component, as was the case in previous studies. This modification may increase OGM reporting to rates consistent with those exhibited in previous research, as well as induce participant arousal during the AMT procedure. Further suggestions for improving upon the current study design are outlined next.

**Future Research**

Future studies could contribute to this line of research by investigating other types of psychopathology as sequelae of family violence exposure. Relational difficulties, substance use disorders, and mood disorders other than depression would be interesting outcome measures to assess. As avoidance seems to be increased in adult survivors of familial abuse, it would also be informative to research dominant coping methods and how these may affect adult functioning. Use of a longitudinal study design would be the most effective way of investigating trends or changes over time in abuse survivors. This method would also allow for appraisal, and sampling as well as statistical control, of the types of abuse experienced during adulthood.

A logical follow-up study based on the current research would ideally entail recruitment at a community level. This would provide a larger participant pool from which to generalize findings. Participants should be brought into the laboratory solely for the AMT portion of the experiment, which would ideally include an experimenter demand component. Participants should then be allowed to respond to symptomatic and demographic assessments in privacy following the lab visit to reduce underreporting. Allowing for electronic survey completion post-experiment would likely facilitate more candid responding. Regarding the experimental portion of the procedure, the AMT would best be administered with a collateral physiological arousal measure other than GSR, perhaps EEG or salivary cortisol measurements. Analysis of salivary cortisol within a longitudinal design would be an excellent means of studying hormonal
fluctuations and their relation to any behavioral changes. Allowing for recurrent annual follow-up administrations of the laboratory component, specifically the AMT, would allow for investigation of changes in arousal and memory recall over time.

Future researchers would be wise to investigate the long-term physiological impact of childhood exposure to violence in an effort to prevent deleterious health effects during adulthood. Comparing physiological reactions across victims of non-physical and physical violence may help to tease out potential organic causes underlying psychological distress. Merging traditional psychological experimental methods of qualitative investigation with a health psychology focus on quantitative physical outcomes would be ideal in this line of research. The linking of psychological difficulties to their physical/organic counterparts would be optimum in this population in order to prevent long-term health problems experienced as the result of chronic childhood trauma.
Table 1

Variable Transformations

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Transformation Implemented</th>
<th>SHAPIRO-WILK VALUE Non-Trans.</th>
<th>Transformed</th>
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<tbody>
<tr>
<td>CES-D Total</td>
<td>Inverse</td>
<td>0.917</td>
<td>0.971</td>
</tr>
<tr>
<td>CCMS-A Psy Violence Total</td>
<td>Logarithmic</td>
<td>0.937</td>
<td>0.954</td>
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</table>

Note: CES-D: Center for Epidemiological Studies – Depression; CCMS-A: Childhood Comprehensive Maltreatment Scale – Adult Version
Table 2

*Frequencies of Demographic Data*

<table>
<thead>
<tr>
<th>Demographic Variable</th>
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<th>%</th>
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</thead>
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<tr>
<td>Gender</td>
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<td>Male</td>
<td>21</td>
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<tr>
<td>Female</td>
<td>41</td>
<td>66.1</td>
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<td>Ethnicity</td>
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<td>Caucasian (Non-Hispanic)</td>
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</tr>
<tr>
<td>African American</td>
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<tr>
<td>Hispanic</td>
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<td>16.4</td>
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<tr>
<td>Asian</td>
<td>6</td>
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<tr>
<td>Other</td>
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<td>8.2</td>
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<td>Marital Status</td>
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<td></td>
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<td>Single (Non-Married)</td>
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<td>4.9</td>
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<tr>
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<td>4.9</td>
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<tr>
<td>Current Education (Undergraduate)</td>
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<td>Full-Time Job</td>
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<td>Annual Income</td>
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<td>Below $10K</td>
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<td>&gt; $70K</td>
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<tr>
<td>Family-of-Origin Annual Income</td>
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<td>$30K-$39,999</td>
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<td>7.1</td>
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<td>$50K-$59,999</td>
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<td>$60K-$69,999</td>
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<td>&gt;$100K</td>
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Table 3

*Independent Samples t-Test Data for Current Age by Violence History*

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<tr>
<th>Violence Subtype</th>
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<th>M</th>
<th>SD</th>
<th>F</th>
<th>p</th>
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<tr>
<td><strong>Sexual Violence</strong></td>
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<td></td>
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<tr>
<td>Yes</td>
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<td>26.10</td>
<td>10.25</td>
<td>11.06</td>
<td>.002</td>
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<td></td>
</tr>
<tr>
<td><strong>Physical Violence</strong></td>
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<td></td>
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<td></td>
<td></td>
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<td>Yes</td>
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<td>8.54</td>
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<td>.008</td>
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<td>3.64</td>
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<tr>
<td><strong>Exposure to Violence</strong></td>
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</tr>
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<td>Yes</td>
<td>30</td>
<td>22.60</td>
<td>6.51</td>
<td>0.45</td>
<td>.507</td>
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<tr>
<td>No</td>
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<td>21.32</td>
<td>4.28</td>
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<tr>
<td><strong>Psychological Violence</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Yes</td>
<td>29</td>
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<td>No</td>
<td>32</td>
<td>21.53</td>
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<tr>
<td><strong>Neglect</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
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<td>No</td>
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Table 4

*Descriptive Statistics for Family Violence Raw Total Scores*

<table>
<thead>
<tr>
<th>Violence (n = 61)</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>% &gt; M</th>
<th>Skew</th>
<th>Kurt.</th>
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</thead>
<tbody>
<tr>
<td>Psychological</td>
<td>9</td>
<td>24</td>
<td>14.75</td>
<td>4.18</td>
<td>47.54</td>
<td>0.48</td>
<td>-0.80</td>
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<tr>
<td>Sexual</td>
<td>0</td>
<td>28</td>
<td>2.36</td>
<td>6.19</td>
<td>16.39</td>
<td>2.82</td>
<td>7.32</td>
</tr>
<tr>
<td>Physical</td>
<td>9</td>
<td>24</td>
<td>11.15</td>
<td>2.57</td>
<td>27.87</td>
<td>2.47</td>
<td>0.60</td>
</tr>
<tr>
<td>Exposure</td>
<td>2</td>
<td>9</td>
<td>3.85</td>
<td>1.88</td>
<td>49.18</td>
<td>0.94</td>
<td>-0.79</td>
</tr>
<tr>
<td>Neglect</td>
<td>6</td>
<td>13</td>
<td>7.08</td>
<td>1.73</td>
<td>26.23</td>
<td>1.82</td>
<td>2.64</td>
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</table>
Table 5

ANOVA Data for Outcome Variables by Violence History

<table>
<thead>
<tr>
<th>VIOLENCE SUBTYPE</th>
<th>None (n =21)</th>
<th>Yes (n=40)</th>
<th>None (n=21)</th>
<th>Phys. (n=22)</th>
<th>Non-Phys.(n=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>m     sd</td>
<td>m     sd</td>
<td>m     sd</td>
<td>m     sd</td>
<td>m     sd</td>
</tr>
<tr>
<td>IES-R Avoidance</td>
<td>0.71^a 1.39</td>
<td>6.04^b 8.33</td>
<td>0.71^a 1.39</td>
<td>6.80^b 8.70</td>
<td>5.11^ab 8.01</td>
</tr>
<tr>
<td>IES-R Intrusions</td>
<td>1.20^a 1.64</td>
<td>3.89^b 5.40</td>
<td>1.20^a 1.64</td>
<td>3.69^a 4.36</td>
<td>4.13^a 6.57</td>
</tr>
<tr>
<td>IES-R Hyperarousal</td>
<td>0.57^a 1.23</td>
<td>2.43^a 4.58</td>
<td>0.50^a 1.23</td>
<td>2.06^a 2.84</td>
<td>2.89^a 6.14</td>
</tr>
<tr>
<td>IES-R Total</td>
<td>2.48^a 3.50</td>
<td>12.36^b 17.03</td>
<td>2.48^a 3.50</td>
<td>12.55^b 14.72</td>
<td>12.13^ab 19.94</td>
</tr>
<tr>
<td>CES-D Total</td>
<td>34.94^a 12.07</td>
<td>33.42^a 7.25</td>
<td>34.94^a 12.07</td>
<td>34.25^a 6.52</td>
<td>32.40^a 8.12</td>
</tr>
</tbody>
</table>

Note: Means with different superscript values are significantly different (p < .05) using Tukey post hoc comparisons; IES-R: Impact of Event Scale – Revised; CES-D: Center for Epidemiological Studies – Depression Scale; ‘None’ column representing no history of family violence is repeated for ease of interpretation.
### Table 6

**ANOVA Data for Memory Ratios by Violence History**

<table>
<thead>
<tr>
<th>VIOLENCE SUBTYPE</th>
<th>None (n=21)</th>
<th>Yes (n=40)</th>
<th>None (n=21)</th>
<th>Physical (n=22)</th>
<th>Non-Physical (n=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEMORY RATIO</td>
<td>m</td>
<td>sd</td>
<td>m</td>
<td>sd</td>
<td>m</td>
</tr>
<tr>
<td>Extended to Specific</td>
<td>0.79^a 0.78</td>
<td>0.68^a 0.61</td>
<td>0.79^a 0.78</td>
<td>0.66^a 0.63</td>
<td>0.70^a 0.60</td>
</tr>
<tr>
<td>Categorical to Specific</td>
<td>0.87^a 0.82</td>
<td>0.83^a 1.04</td>
<td>0.87^a 0.82</td>
<td>0.75^a 0.57</td>
<td>0.92^a 1.44</td>
</tr>
<tr>
<td>OGM (E+C) to Specific</td>
<td>1.66^a 1.40</td>
<td>1.50^a 1.46</td>
<td>1.66^a 1.40</td>
<td>1.41^a 1.11</td>
<td>1.62^a 1.82</td>
</tr>
</tbody>
</table>

*Note: Means with different superscript values are significantly different (p < .05) using Tukey post hoc comparisons; OGM (E+C) – Overgeneral Memory (Extended + Categorical); ‘None’ column is repeated for ease of interpretation.*
Table 7

*Comparative Case Examples of AMT Memories*

<table>
<thead>
<tr>
<th>Memory Subtype</th>
<th>AMT Cue Word</th>
<th>Familial Violence Subtype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overgeneral – Extended</td>
<td>Lonely</td>
<td>Neglect</td>
</tr>
<tr>
<td>“Loneliness reminds me of middle school. My sister had moved out, she had her own place. My mom, she was always at work or at school or church. And eventually my sister went to jail. So it always seemed like I was by myself all the time when I would come home from school. Cooked dinner for myself, did my homework, spent most of the day by myself. Just a lonely time during my middle school years.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overgeneral – Categorical</td>
<td>Frightened</td>
<td>Neglect, Psychological</td>
</tr>
<tr>
<td>“Me and my sister were very scared, frightened when we were little every weekend when we went away to stay with our biological father and our stepmom. My stepmom was very, very mean to us. She used to make us watch all these horrible movies when we were so young, scary movies. I remember she used to lock us in the basement. She wouldn’t even let us use the phone so we couldn’t call our mom. Just things like that, secluding us, we just got really scared a lot. I mean, we’d cry leaving and going there every weekend. It was scary.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Overgeneral / Specific</td>
<td>Ashamed</td>
<td>Physical</td>
</tr>
<tr>
<td>“The word is ashamed. Umm, my dad was very abusive to my mom from my early childhood I would say about... from as early as I can remember until I was about 4. And then he started being abusive to me. And I remember there was this one instance where he hit me in the cheek with the palm of his hand like really, really hard and I just saw the look on his face and I was thinking to myself, &quot;He’s a grown man, he’s my father, and he did that to a child, to his own child&quot;.”</td>
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</table>
### Table 8

**ANOVA Data for GSR Activity by Violence History**

<table>
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<tr>
<th>WORD VALENCE</th>
<th>None (n=21)</th>
<th>Yes (n=40)</th>
<th>VIOLENCE SUBTYPE</th>
<th>None (n=21)</th>
<th>Physical (n=22)</th>
<th>Non-Physical (n=18)</th>
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</thead>
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<tr>
<td></td>
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<td>sd</td>
<td>m</td>
<td>sd</td>
<td>m</td>
<td>m</td>
</tr>
<tr>
<td>Positive Words</td>
<td>5.60&lt;sup&gt;a&lt;/sup&gt; 3.71</td>
<td>5.79&lt;sup&gt;a&lt;/sup&gt; 3.03</td>
<td>5.60&lt;sup&gt;a&lt;/sup&gt; 3.71</td>
<td>5.55&lt;sup&gt;a&lt;/sup&gt; 3.49</td>
<td>6.08&lt;sup&gt;a&lt;/sup&gt; 2.42</td>
<td></td>
</tr>
<tr>
<td>Negative Words</td>
<td>5.47&lt;sup&gt;a&lt;/sup&gt; 3.59</td>
<td>5.70&lt;sup&gt;a&lt;/sup&gt; 2.95</td>
<td>5.47&lt;sup&gt;a&lt;/sup&gt; 3.59</td>
<td>5.46&lt;sup&gt;a&lt;/sup&gt; 3.43</td>
<td>6.00&lt;sup&gt;a&lt;/sup&gt; 2.31</td>
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<tr>
<td>Neutral Words</td>
<td>4.89&lt;sup&gt;a&lt;/sup&gt; 3.08</td>
<td>5.00&lt;sup&gt;a&lt;/sup&gt; 2.39</td>
<td>4.89&lt;sup&gt;a&lt;/sup&gt; 3.08</td>
<td>4.66&lt;sup&gt;a&lt;/sup&gt; 2.70</td>
<td>5.42&lt;sup&gt;a&lt;/sup&gt; 1.94</td>
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*Note: Means with different superscript values are significantly different (p < .05) using Tukey post hoc comparisons; ‘None’ column is repeated for ease of interpretation.*
Table 9

Summary of Linear Regression Analyses for Variables Predicting PTSD

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<tr>
<th></th>
<th>IES-R</th>
<th>Age</th>
<th>Psychological</th>
<th>Sexual</th>
<th>Physical</th>
<th>Exposure</th>
<th>Neglect</th>
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<tbody>
<tr>
<td>B</td>
<td>0.19</td>
<td>10.36</td>
<td>3.61</td>
<td>2.35</td>
<td>0.87</td>
<td>3.89</td>
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<tr>
<td>β</td>
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<td>0.36</td>
<td>0.09</td>
<td>0.07</td>
<td>0.03</td>
<td>0.12</td>
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<tr>
<td>t</td>
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<td>2.08</td>
<td>0.66</td>
<td>0.48</td>
<td>0.20</td>
<td>0.87</td>
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<tr>
<td>p</td>
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<td>0.84</td>
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Note: IES-R: Impact of Events Scale – Revised; Significant Model \( F [6, 54] = 2.324, p < .05 \)

** p < 0.01
*p < 0.05

Intercorrelations

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<th>Psych</th>
<th>Sexual</th>
<th>Physical</th>
<th>Exposure</th>
<th>Neglect</th>
</tr>
</thead>
<tbody>
<tr>
<td>IES-R</td>
<td>---</td>
<td>-0.07</td>
<td>-0.41**</td>
<td>0.02</td>
<td>-0.27*</td>
<td>-0.18</td>
<td>-0.26*</td>
</tr>
<tr>
<td>Age</td>
<td>---</td>
<td>-0.08</td>
<td>-0.34**</td>
<td>-0.19</td>
<td>-0.12</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Psych</td>
<td>---</td>
<td>0.20</td>
<td>0.58**</td>
<td>0.51**</td>
<td>0.40**</td>
<td></td>
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<tr>
<td>Sexual</td>
<td>---</td>
<td>0.22</td>
<td>0.36**</td>
<td>0.14</td>
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<td></td>
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<tr>
<td>Physical</td>
<td>---</td>
<td>0.34**</td>
<td></td>
<td>0.21</td>
<td></td>
<td></td>
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<tr>
<td>Exposure</td>
<td>---</td>
<td></td>
<td></td>
<td>0.31*</td>
<td></td>
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</tr>
</tbody>
</table>
Figure 1.

Skin conductance measurement using GSR MP150 ®.
APPENDIX

BACKGROUND INFORMATION FORM
# Background Info Form

Please fill out this form by checking the appropriate line or writing in the requested information.

1. **Age:** _______
2. **Gender:** Male ______  Female ______
3. **Race / Ethnicity:** ______________________
4. **Marital Status:** Single (Non-Married)_______ Divorced/Separated ______
   Currently Married ______   Widowed ______
5. **Current Education:** Freshman _____  Sophomore _____  Junior _____  Senior _____
7. **YOUR Annual Income:** Below $10,000 _____  $10,000 - $19,999 _____
   $20,000 - $29,999 _____  $30,000 - $39,999_____
   $40,000 - $49,999 _____  $50,000 - $59,999 _____
   $60,000 - $69,999 _____  $70,000 and more _____
8. **Who lived in your house during your childhood (family-of-origin)?** Check all that apply:
   - Biological Mother _____
     - Occupation during *your* childhood: _________  Highest Education: __________
   - Biological Father _____
     - Occupation during *your* childhood: _________  Highest Education: __________
   - Step-Mother _____
     - Occupation during *your* childhood: _________  Highest Education: __________
   - Step-Father _____
     - Occupation during *your* childhood: _________  Highest Education: __________
   - Sister(s) – How Many? _____  Aunt(s) – How Many? _____
   - Brother(s) – How Many? _____  Uncle(s) – How Many? _____
   - Other(s) _______________________________________
9. **Circle** any of the above who were a source of *social support* (trustworthy confidant) to you during your childhood.  Other social support (Teacher, Pastor, etc.)? ________________
10. **Your FAMILY-OF-ORIGIN Annual Income:**
    - Below $20,000 _____  $20,000 - $29,999_____
    - $30,000 - $39,999 _____  $40,000 - $49,999 _____
    - $50,000 - $59,999 _____  $60,000 - $69,999 _____
    - $70,000 - $79,999 _____  $80,000 - $89,999 _____
    - $90,000 - $99,999 _____  $100,000 and more _____
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