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Moderators in the Relationship between Child Maltreatment and Symptoms of Depression

by

Sarah Nowalis

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

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### Abstract

Experiencing child maltreatment is a risk factor for later psychopathology, however, not all survivors of child maltreatment go on to develop mental illness. Therefore, there are likely important moderators that interact with child maltreatment to contribute to the development of psychopathology. The present study examined attachment and stress severity of life events as possible moderators in the association between child maltreatment and later depressive symptomatology in a population of college students. Participants completed measures of attachment, stressful life events, current mood symptoms, and demographic information. An attachment style characterized by anxiety and avoidance, and greater cumulative stress severity were expected to exacerbate the effect of child maltreatment on depressive symptomatology. Anxious attachment to primary caregivers moderated the relationship between child maltreatment and depressive symptoms. This study found no support for the other moderation hypotheses, however, the main effect of stress severity was significant over and above the effects of child maltreatment. These variables, as well as child maltreatment itself, may result in disruptions in the development of adaptive emotion, and stress regulation. This research highlights important areas of intervention in cases of child maltreatment.

*Key Words:* child maltreatment, depression, attachment, stress, life events, college students, moderation

### Moderators in the Relationship between Child Maltreatment and Symptoms of Depression

Child maltreatment, which includes physical abuse, physical neglect, emotional abuse, emotional neglect, and sexual abuse, is a developmental risk factor that can lead to various forms of psychopathology throughout the lifespan (Cicchetti & Toth, 2005). The United States Department of Health and Human Services (USDHHS) reported an estimated total of 3.6 million child maltreatment (CM) referrals, involving 6.6 million children in 2014 (USDHHS, 2016). Of reports that were investigated, an estimated 702,000 victims were identified. These numbers reflect only those instances that were both reported and substantiated. However, an unsubstantiated allegation does not mean that no maltreatment occurred; in fact, research has suggested that children involved in unsubstantiated cases may be at future or continued risk for CM (Kohl et al., 2009). Additionally, many instances of CM go unreported; a national study estimated that maltreatment rates are 50% higher than actual report rates (Korbin & Krugman, 2014). In the United States, it is estimated that 1 in 8 children will experience maltreatment by the time they are 18 years old (Wildeman et al., 2014).

Broadly, CM is defined as an act or failure to act which results in death, physical harm, emotional harm, sexual abuse, or puts a child at risk for serious harm (USDHHS, 2016). There are multiple subtypes of CM; it is important to distinguish between the different types because they can affect children in different ways. Physical abuse (PA) is defined as a physical assault on a child that caused or could have caused physical harm (Bernstein et al., 2003). Physical neglect (PN) is a lack of appropriate care of a child, including basic needs such as adequate nutrition, clothing, safety, and medical care. PN can come in many forms, from leaving a child unsupervised, to not dressing a child appropriately for the weather, to not feeding a child. Emotional abuse (EA) is characterized by an adult telling a child negative things about himself

or herself that attack their sense of worth, or that are demeaning or humiliating (e.g. telling a child that they are worthless). Emotional neglect (EN) is characterized by ignoring a child's emotional and psychological needs. For example, ignoring a child's need to be soothed when they are upset. Sexual abuse (SA) is defined as sexual behavior or contact occurring between a child and an older person (Bernstein et al., 2003). In 2014, neglect was the most substantiated type of CM comprising 75% of cases, followed by physical abuse (17%), sexual abuse (8.3%) and emotional abuse (6%; USDHHS, 2016). Certain types of abuse, such as neglect and physical abuse, are more visible and thus more likely to be substantiated.

A number of investigations have linked CM to deleterious outcomes for both physical and mental health (Cicchetti & Toth, 2005; Corwin & Keeshin, 2011; Teicher & Samson, 2013; Cicchetti & Banny, 2014). Studies have linked CM with various psychopathologies including post-traumatic stress disorder (PTSD), anxiety, personality disorders, substance use disorders, depression, and bipolar disorder (Cicchetti & Toth, 2005; Corwin & Keeshin, 2011; Cicchetti & Banny, 2014). CM has also been associated with a more severe course of illness and poorer response to treatment among individuals who develop psychopathology (Teicher & Samson, 2013).

### **Depression and Child Maltreatment**

The *Diagnostic and Statistical Manual of Mental Disorders (DSM-5;* American Psychiatric Association, 2013) outlines the symptoms of depressive disorders: depressed mood; lack of pleasure or interest in activities; lack of energy; low self-esteem; hopelessness; significant changes in weight; insomnia or hypersomnia; psychomotor agitation or retardation; feelings of worthlessness or guilt; lack of ability to think, concentrate or make a decision; thoughts of death, suicidal ideation or planning or attempting suicide. Depressive disorders can occur at any age,

even in childhood and adolescence. The earlier the onset of a depressive disorder, the more likely that comorbid personality and substance use disorders will occur as well (American Psychiatric Association, 2013). Therefore, risk factors for depression that occur in childhood, such as CM, may severely influence the course and severity of depression.

Research has linked depressive symptomatology with CM. Alloy, Abramson, Smith, Gibb and Neeren (2006), reviewed studies assessing CM and depression. CM, specifically EA, has been associated with depressive symptoms across several studies. Significant associations between other subtypes of abuse and depressive disorders have also been found (Alloy et al., 2006). Nanni, Uher and Danese (2012) conducted a meta-analysis of both epidemiological and clinical studies of depression in those with and without CM histories. They found that a maltreatment history predicted recurrent and persistent depressive episodes, as well as poor response to treatment and remission (Nanni et al., 2012). Depressive disorders permeate many aspects of a person's life and a history of CM makes treatment and recovery even more difficult. Elucidating what factors contribute to, and protect against, the development of depression after CM is essential to early intervention efforts.

### **Resiliency, Protective Factors, and Risk Factors**

While CM is a risk factor for various types of psychopathology, not all children who are maltreated develop later psychopathology (Cicchetti & Toth, 2005). Multifinality is a concept that suggests that similar experiences can have many different outcomes (Toth & Cicchetti, 2013). For example, victims of physical abuse can develop an anxiety disorder, a mood disorder or no disorder at all. Equifinality suggests that different experiences can result in the same or similar outcomes (Toth & Cicchetti, 2013). For example, a victim of physical abuse and a victim of sexual abuse may both develop post-traumatic stress disorder. Research examining risk and

protective factors may clarify which factors interact to result in multifinality, and/or equifinality.

A risk factor increases the probability of an adverse outcome, alternatively, a protective factor mitigates the effect of an adverse event or circumstance (Afifi & MacMillian, 2011). Genetic, biological, cognitive and interpersonal factors have been identified as protective factors against the harmful effects of CM (Collishaw et al., 2007). Interpersonal factors such as familial stability and support, social connections, peer and partner relationships have been associated with resiliency. Personal factors that have predicted resilience include self-esteem, self-efficacy, feelings of control, and reduced self-blame (Collishaw et al., 2007; Cicchetti & Banny, 2014). Less severe abuse, absence of re-victimization and adaptive coping are also factors associated with resilience (Collishaw, et al., 2007; Afifi & MacMillian, 2011).

In addition to psychopathology, general mental health and psychosocial issues are also present in those who experience CM. CM has been associated with poor attachment to caregivers and others, negative representations of the self and others, poor peer relations and altered brain function (Cicchetti & Banny, 2014). Maltreated children may have problems adjusting to school, developing a sense of self, and regulating their emotions (Cicchetti & Toth, 2005). These psychosocial factors may put these individuals at increased risk for developing psychopathology. The present study focuses on insecure attachment, and stress severity of life events as possible risk factors that interact with CM to increase the chances of developing depressive symptoms.

### **Attachment.**

Attachment, as defined by Ainsworth and Bell (1970), is an affectionate bond between two people that permeates space and time. The earliest attachments formed are those between a child and caregiver. Interactions between child and caregiver are thought to determine the type of



attachment that is developed (Ainsworth & Bell, 1970; Bowlby, 1988; Toth, Gravener-Davis, Guild & Cicchetti, 2013). These early attachment styles are thought to influence later attachment to peers and romantic partners throughout adolescence and adulthood (Bowlby, 1988; Cicchetti & Banny, 2014). Insecure attachments may result in children developing negative internal working models of themselves (e.g. “I deserved what happened to me”) and others (e.g. “I can’t trust others”; Bowlby, 1988). A negative internal working model of others may make it difficult for the individual to develop secure attachments to others throughout life.

Adult attachment was categorized by Bartholomew and Horowitz (1991) based on internal working models of the self and others. They suggested conceptualizing adult attachment based on view of self (worthy of love/not worthy) and view of others (trustworthy/available vs. not trustworthy/available). Individuals who view themselves as worthy of love, and view others as trustworthy/available, are characterized as secure. Individuals who view themselves as unworthy, and others as trustworthy, are characterized as preoccupied. Individuals who view themselves as worthy, and others as not trustworthy, are characterized as dismissing. Those who view themselves as unworthy, and others as untrustworthy, are characterized as fearful (Bartholomew & Horowitz, 1991). This model is a commonly used framework of adult attachment (Gillath, Karantzas, & Fraley, 2016). The model has been revised slightly, changing view of self and view of others to simple anxiety and avoidance dimensions. Anxiety in this model relates to feelings of unworthiness, as well as a fear of being abandoned or rejected. Avoidance refers to an aversion to closeness or dependency on someone else (Gillath, Karantzas, & Fraley, 2016). This is the conceptual model that was used in the present study.

Research has suggested that attachment remains relatively stable from infancy to adolescence and adulthood. In a study by Hamilton (2000), attachment was assessed in infancy and again in

adolescence. Seventy-seven percent of the adolescents maintained the same attachment style as they exhibited in infancy. Similarly, Waters et al. (2000) conducted a twenty-year longitudinal study and found that 64% of the adult participants maintained the same attachment style they exhibited in infancy. Fraley, Vicary, Brumbaugh and Roisman (2011) examined two theories of adult attachment stability. One theory suggested that attachment is a stable concept that influences relationships throughout life. The other theory suggested that attachments are not stable over time, but sensitive to situational and social factors. They found that the former theory was a better explanation for the data than the latter (Fraley et al., 2011). This research suggests that attachment styles developed in infancy have long lasting effects and implications.

CM may weaken a secure attachment or contribute to the maintenance of an insecure attachment. Research has shown that secure attachment tends to become insecure over time, in opposition to insecure attachments which tend to remain stable (Toth et al., 2013). Insecure attachment styles have been found in maltreated infants, toddlers and preschoolers (Toth et al., 2013), as well as adolescents and adults. Oshri, Sutton, Clay-Warner and Miller (2015) examined CM, attachment styles and risk behaviors in adolescents. Results showed that SA and EA were both positively correlated with anxious and avoidant attachment styles. Bifulco et al. (2006) conducted a study of high risk women. Of women reporting the most insecure attachment styles, 92% reported experiencing CM. The percentage of women who reported experiencing CM decreased as attachment styles approached secure attachment (Bifulco et al., 2006). This indicates that individuals who experience CM may be at greater risk for having insecure attachment styles, even as adults. Those who have experienced high levels of CM and have insecure attachments may be at a greater risk for depression.

Children learn how to regulate their emotions from their caregivers (van der Kolk & Fisler, 1994). Emotion regulation refers to the way in which individuals manage their emotions, including how and when emotions are experienced and expressed (Gross, 2008). In secure attachments, parents teach children how to soothe themselves when they become upset; in insecure attachments children may not be taught these skills (van der Kolk & Fisler, 1994). Emotion regulation is essential in engaging in adaptive behavior, as well as inhibiting maladaptive behavior (Cicchetti, Ackerman, & Izard, 1995), thus, emotion regulation is essential to a child's adaptation to life (Kim & Cicchetti, 2010). Emotion dysregulation has been associated with psychopathology (Gross, 2008). Children who experience CM and do not have a secure attachment to parents may not be able to effectively manage their emotions, which may result in psychopathology, such as depression. Alternatively, children who experience CM and have a secure attachment may be more skilled at coping with CM's adverse effects.

### **Stressful Life Events.**

Stressful life events can vary greatly from the death of a loved one, to getting suspended from school, to breaking up with a significant other. The individual's experience of the event is very important. For example, death of a loved one may be a relief if the loved one was suffering for a long time, but devastating if they were killed in an unexpected accident. Individuals who experience CM are more likely to encounter additional negative life events, such as more adversities and additional abuse than non-maltreated individuals (Corwin & Keeshin, 2011). Coid et al. (2001) conducted a large study of women who endured childhood SA and PA. They found that severity of childhood SA and PA were associated with revictimization as an adult (Coid et al., 2001). Even as adults, victims of CM may be at an increased risk of encountering additional stressful life events.

High levels of stress can result in stress sensitization in which an individual becomes more sensitive and reactive to lower amounts of stress (Hammen et al., 2000). Hammen et al. (2000) found that women who reported more stressful experiences in childhood were more likely to develop depression after exposure to fewer stressful life events as adults, compared to women without childhood adversities. Similarly, Stroud, Davila, Hammen and Vrshek-Schallhorn (2011) found that individuals with a history of depression were impacted more by events low in severity than individuals who did not have a history of depression. McLaughlin, Conron, Koenen, and Gilman (2010) examined the stress sensitization hypothesis and its' relation to psychopathology. They found that stressful events in the past year were associated with risk of psychopathology, but this risk increased if the participant reported encountering childhood adversities. Among participants who reported three or more childhood adversities, past-year stress was associated with a 27.3% increase in risk of depression. In comparison, among individuals without childhood adversities there was only a 14.8% increased risk (McLaughlin et al., 2010). This study indicates that individuals with a history of adversity in childhood are more likely to develop psychopathology, such as depression, after negative life events than individuals who did not experience adversity in childhood.

The current study will examine if the interaction of CM and stress severity predicts depressive symptoms in young adults. CM itself is a stressful life event, additional stress, or the lack of additional stress may have an impact on the severity of depression due to stress sensitivity. The more cumulative stress one experiences, the more likely that it will lead to depressive symptoms. The present study will also examine the rates of different stressful life events in the college student sample. The transition to college can cause an increase in stressful life events for those in this demographic which may have an adverse effect on mental health. Identifying which life

events are commonly experienced by this demographic can guide practitioners to effective intervention and treatment of this population.

### **Summary**

CM is prevalent in the United States, and it is also associated a plethora of adverse physical and mental health outcomes, including depression (Cicchetti & Toth, 2005; Corwin & Keeshin, 2011; Teicher & Samson, 2013; Cicchetti & Banny, 2014). Utilizing a developmental psychopathology framework, CM can be viewed as an obstruction to a child's adaptation which may result in adverse outcomes (Cicchetti & Banny, 2014). The multifinality of CM indicates that other factors influence how the experience of CM results in healthy adaptation or maladaptation. Two factors of interest in the present study are attachment to caregivers and stressful life events.

Secure attachment to caregivers may result in adaptive emotion regulation after instances of CM. Alternatively, insecure attachments can result in negative internal working models of oneself and others, and poor emotion regulation in the face of adversity. In the present study, attachment styles low in anxiety and avoidance were expected to act as a buffer against depression, even in the aftermath of CM. While attachment styles high in anxiety and avoidance were expected to exacerbate these depressive symptoms. Individuals who experience excessive stress over time may become increasingly sensitive to stress. This sensitivity to stress can increase one's vulnerability to developing depression. High stress severity in addition to experiences of CM was expected to result in higher depressive symptoms.

The present study is aimed at examining the effects of the interaction of CM and attachment, and CM and stress severity on depressive symptoms in a population of young adults. It is anticipated that these two constructs, attachment and stress severity, will moderate the

association between CM and depressive symptoms. The present study may indicate two, of many, constructs that explain why CM results in multifinality regarding depression. This study may also point to important interventions in cases of CM.

### **Present Study**

The present study was aimed at examining the associations between CM and later depressive symptomatology in young adults, as well as possible psychosocial moderators in this relationship, namely: attachment and stressful life events. This study will contribute to the existing literature in several important ways. Previous research on the outcomes of CM in the period between adolescence and adulthood is scarce (Toth & Cicchetti, 2013). Young adults face significant challenges and changes in life; independence, autonomy, identity formation, personal and professional issues are just some of the stage salient tasks this population has to navigate (Toth & Cicchetti, 2013). Many young adults move away from caregivers and the securities of their home environment to get an education or a job. Young adults may also begin to establish significant relationships with friends and romantic partners. A history of CM may increase the challenge of some of these tasks. Sensitivity to stress also poses problems for those in this age range because these life changes increase the likelihood that a stressful event will occur.

This population was expected to be of a higher socioeconomic status (SES) than the populations typically studied in CM research. Research on CM in middle and upper-class environments is lacking (Toth & Cicchetti, 2013). It is possible that there may be some differential outcomes of CM based on SES. Lower SES caregivers and children may both have limited social support and may be more prone to experiencing stressful life events. The additional stress of low SES may increase the conflict in the parent-child relationship and result in poor attachment and CM. Low SES families may not have the resources to provide support,

such as therapy, to the child after CM. It is possible that some of these effects may be mitigated in a higher SES population, where caregivers may have more social support or more resources to support the child. These are just a few of the many ways SES can impact victims of CM. This study may outline some of the potential differential outcomes based on SES. SES was examined as a potential covariate in the preliminary analyses.

This sample is not a clinical population, which can be considered another advantage of this study (Corwin & Keeshin, 2011). The results of this study will reflect the symptomatology of young adults who have experienced CM but may not have developed a psychopathology or be diagnosed. This is an important population that may sometimes be ignored due to their sub-clinical symptoms or disorders. Interventions for the prevention of depression may be essential to preventing the development of clinical depression. Results from a subclinical population can also help delineate risk and protective factors, by comparing their results to a clinical sample's results.

The types of stressful life events experienced by this sample will also be examined. The STRAIN provides rich information on the count, severity, length, and characteristics of the stressful events encountered by the sample. This data will be explored using descriptive statistics to see what domain and psychological characteristic were most prevalent among the sample. This information will provide insight into what types of stress are encountered among college students, and how the severity of events varies among the types of events. This may clarify what types of coping skills or interventions may be appropriate for stress management in this population.

The present study addresses a topic of utmost importance, CM, in a new and comprehensive way. This study will contribute to the existing literature by expanding the research to a

population of emerging adults, this population has different demographics than the populations typically studied in maltreatment literature. The results will have important implications for the future study of risk and protective factors in this population. Results may implicate the importance of interventions targeting attachment styles in individuals who have experienced CM. It may also indicate that these individuals may benefit from learning strategies to cope with life's stressors.

### **Hypotheses.**

Hypothesis 1: Adult attachment style to caregivers will moderate the association between CM and depressive symptomatology (see Appendix A, Figure A1). It is expected that, in both primary and secondary caregiver relationships, high levels of CM interacting with attachment styles high in anxiety and avoidance will predict increased depressive symptomatology. Low levels of CM interacting with low levels of anxious and avoidant attachment are expected to predict low levels of depressive symptomatology.

Hypothesis 2: Stress Severity will moderate the relationship between CM and depressive symptomatology (see Appendix A, Figure A2). High levels of stress severity interacting with high levels of CM are expected to predict increased depressive symptomatology. Low levels of stress severity are expected to interact with low levels of CM to predict high depressive symptomatology.

In addition to these hypotheses, exploratory analyses will be completed examining the different types of stressful life events, their prevalence, duration, severity, domain, and social-psychological characteristics. No specific hypotheses will be tested for this data.

## **Method**

### **Participants**



Participants ( $N=215$ ) self-selected to participate in the study online. Participants were all students at a college in the northeastern United States. After missing data strategies were employed 196 participants remained; nineteen participants were listwise deleted due to an excessive amount of missing data. The age of participants ranged from 18 to 36 ( $M=19.85$ ,  $SD = 2.20$ ) and males comprised 51.5% of the sample ( $n = 101$ ). Sixty-three percent of participants identified as white, 13.8% as Asian, 10.7% as Black, and the remaining were made up of other races (see Table 1). The majority of participants (67.3%) endorsed no psychological diagnoses, 24% endorsed one diagnosis, 7.7% two diagnoses, 1% endorsed three diagnoses. These diagnoses did not include depression. One hundred and forty-four participants (83.16%) endorsed no type of psychological treatment (medication, therapy, and/or “other”), 18.37% endorsed one type of treatment, and 8.16% endorsed receiving two types of treatment. Participants were asked to report known diagnoses of their biological mother, father, siblings and other biological relatives. Reports of biological family members’ diagnoses ranged from zero to fourteen diagnoses.

## **Materials**

### **Demographic Survey.**

Participants completed a general demographic survey (see Appendix B). Participants were asked general demographic questions including questions regarding sex, average household income, and age. Participants were also asked about their hearing status, as there is a large population of deaf and hard of hearing individuals at this particular institution. Participants were asked if they had any mental health diagnoses, and what types of treatment(s) they were receiving. Participants were also asked about biological relatives’ mental health diagnoses.

### **Beck Depression Inventory-II.**

The Beck Depression Inventory - II (BDI-II; Beck, Steer, & Brown, 1996) was used to evaluate current depressive symptoms. Participants reported how they have been feeling for the past two weeks including the present day. The BDI-II is comprised of 21 questions that assess various symptoms of depression (e.g. Irritability), each symptom has four statements regarding severity rated on a scale of zero (“I am no more irritable than usual”) to three (“I am irritable all the time”) with higher scores indicating the presence of a depressive symptom. Scores range from zero to sixty-three with higher scores indicating more severe depression, and a score of 13 or less suggests the absence of depression (Wang & Gorenstein, 2013).

Wang and Gorenstein (2013) conducted a review of literature that utilized the BDI-II. The BDI-II has been widely used and translated into many languages and has been reported to have good psychometric properties. Convergent validity with other widely used measures of depression has been good ( $r = .66 - .86$ ), internal consistency has been good ( $.83 - .96$ ), and test-retest reliability has ranged from  $.73 - .96$ . Sensitivity has been reported to be greater than or equal to  $.70$  while specificity ranged from  $.57 - .92$ . This measure has been used with clinical and non-clinical populations and has performed well (Wang & Gorenstein, 2013). Cronbach’s alpha in the present study was high ( $\alpha = 0.93$ ).

#### **Altman Self-Rating Mania Scale.**

The Altman Self-Rating Mania Scale (ASRM; Altman, Hedeker, Peterson, & Davis, 1997) was used to evaluate and control for possible manic symptoms. Respondents respond to the scale based on how they have felt for the past week. The ASRM is composed of five categories (e.g. happiness/cheerfulness). Each category has statements that are answered on a scale of zero (“I do not feel happier or more cheerful than usual.”) to four (“I feel happier or more cheerful than usual all of the time.”). A score greater to or equal to six suggests that the individual is

experiencing a manic or hypomanic episode (Altman et al., 1997).

Altman et al. (1997) developed the scale using mania criteria from the *Diagnostic and Statistical Manual of Mental Disorders - IV* (DSM-IV; American Psychiatric Association, 1994). The scale has demonstrated good test-retest reliability ( $r = .86, p < .001$ ) and good validity ( $\alpha = 0.79$ ). Concurrent validity was also assessed by comparing the ASRM to an objective clinician administered scale ( $r = .77, p < .001$ ), and a self-report mania scale ( $r = .72, p < .001$ ). At the cutoff score of five, sensitivity was .86 and specificity was .87 (Altman et al., 1997). Cronbach's alpha for the scale in the present study was lower than that of the other measures ( $\alpha = 0.78$ ).

### **Childhood Trauma Questionnaire - Short Form.**

The Childhood Trauma Questionnaire - Short Form is a 28 item Likert scale self-report questionnaire that assesses experiences of childhood trauma (CTQ-SF; Bernstein et al., 2003). The instrument assesses childhood experiences of physical abuse (PA; e.g. "I got hit so hard by someone in my family that I had to see a doctor or go to the hospital."), physical neglect (PN; e.g. "There was someone to take me to the doctor if I needed it."), emotional abuse (EA; e.g. "I felt that someone in my family hated me."), emotional neglect (EN; e.g. "There was someone in my family who helped me feel that I was important or special."), and sexual abuse (SA; e.g. "Someone threatened to hurt me or tell lies about me unless I did something sexual with them."). Twenty-five items assess for abuse and three items assess minimization of abuse experiences. Each statement is answered on a Likert scale from zero, "never true," to four, "very often true," with some items being reverse scored (Bernstein et al., 2003). In this way more severe CM, in terms of frequency, is indicated with higher scores. It is also possible to examine how many individual types of abuse were endured by the respondent.

This measure has demonstrated measurement invariance among different populations

including psychiatric patients, individuals with substance abuse issues and healthy controls (Bernstein et al., 2003). The criterion validity of the measure was examined by comparing the results of the CTQ-SF to therapist ratings of participant's trauma experiences. Therapist ratings of trauma were correlated with participant self-reports on the CTQ-SF ( $ps < .01$ ) which supports the measure's convergent and discriminant validity (Bernstein et al., 2003). The Cronbach's alphas for all five subscales ranged from acceptable (PN;  $\alpha = 0.75$ ) to high ( $\alpha = 0.90$ ; see Table 2).

### **Experiences in Close Relationships - Revised.**

The Experiences in Close Relationships - Revised is a 36 item self-report measure of adult attachment (ECR-R; Fraley, Waller & Brennan, 2000). It can be modified to measure several different kinds of attachment relationships including attachment to caregivers. Statements are rated on a seven point Likert scale (e.g. "I do not often worry about being abandoned"; 1 = strongly disagree, 7 = Strongly agree). Eighteen items measure anxiety, the remaining 18 measure avoidance. The measure is scored by taking the average of the anxious and avoidant items so that two scores are obtained, one for anxiety and one for avoidance. Anxiety and avoidance scores can be plotted to identify which attachment style one has, however, in the present study the independent scores for anxiety and avoidance alone are of interest. Individuals can vary in terms of the severity of anxious and avoidant attachment. The measure was constructed by conducting a principal components analysis of 60 attachment measures (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). The ECR-R has been widely used and its reliability is high; Cronbach's  $\alpha$ s have been reported to range near .90. This measure was used to assess participant's current attachment to the individuals who were their primary and secondary caregivers in childhood. Cronbach's alphas in the present study were high (see Table 2).

**The Stress and Adversity Inventory.**

The Stress and Adversity Inventory (STRAIN; Slavich & Epel, 2010) inquires about 96 different stressful life events (e.g. housing, education, finances, crime), including acute life events and chronic stressors. This inventory is structured like an interview; however, it is self-administered online and takes about 25-35 minutes. The interview includes branching logic; therefore, it is able to obtain information regarding the count, severity, and timing of each event the individual reports. Total stressor count can range from 0 to 96. The severity score on the measure can range from 0 to 480; for each event endorsed participants are asked to rate the event's stressfulness on a five point Likert scale. This assessment provides cumulative variables that summarize life stress as well as raw individual variables. Summary scores are also obtained for different time periods in life; early life is comprised of events that occurred prior to 18, while adulthood includes those events occurring at age 18 and older. Events are also divided into 12 domains (e.g. education, financial), and 5 social-psychological characteristics (Toussaint, Shields, Dorn, & Slavich, 2016).

The measure was developed through literature review, input from experts on life stress, and input from previous measures of life stress including a gold standard measure. This novel measure has been used to measure stress and adversity in cancer survivors (Bower, Crosswell, & Slavich, 2014), women (Kurtzman et al., 2012), and college students (Toussaint et al., 2016). Lifetime stress exposure was associated with poorer physical and/or mental health outcomes in all three studies. In college students, greater stress severity, as measured by the STRAIN was related to greater psychological distress (Toussaint et al., 2016).

The present study is interested in various types of negative life events that are not related to the experience of CM such as those measured by the STRAIN. Life events that are seemingly

innocuous, such as a change of residence, or devastating, such as the death of a close relative, may contribute to the development of psychopathology. Importance is placed on the individual's experience of the event. Therefore, negative life events will be measured by the individuals' stress severity score. Additional experiences of abuse will be accounted for, but not considered as additional negative life events, as they are separate constructs in the context of this study.

### **Procedure.**

Participants self-selected to participate in the survey online and were given course credit in exchange for their participation. Participants chose the study from a list of ongoing studies conducted on campus. After signing up for the study they were redirected to the survey hosted on Qualtrics. The survey materials were presented in a randomized order to every participant, and the order of items within each measure was randomized. For the STRAIN assessment, participants were redirected to the STRAIN website. After finishing the survey participants were granted their course credit.

### **Analyses**

#### **Missing Data.**

Two hundred and fifteen students ( $N = 215$ ) consented to the online survey. Of those participants 39 (18%) were missing some or all of the measures. For every measure, except the ECR-R, participants answered either none or all of the questions. Fifteen participants were missing data on 5 or more main variables, of those 15 only 1 had demographic variables. In addition to these 14 who were missing demographic information, 4 more participants were missing all demographic information. Several demographic variables were examined as covariates in the analyses. All of these participants ( $n = 19$ ; 8.84%) were list wise deleted, they

did not provide enough data to reliably use an imputation strategy to input data on the main variables or their demographics.

Seventeen of the remaining participants missing data were missing data on the STRAIN, this is believed to be because of a glitch with the website. The PI received 4 emails from different participants informing her of an issue in which the program would not let the participant continue. Guidance from Roth (1994) suggests that when 6-10% of data is missing at random, regression is an acceptable form of imputation. The STRAIN stress severity scores were imputed using a regression equation ( $R^2 = 0.47$ ).

Three remaining people (1.5%) were missing information on one or more variable. All three were missing the BDI-II, these scores were mean imputed because using regression would bias the final analyses, since BDI-II was the dependent variable. One person was missing the CTQ-SF, a regression equation was used to impute data ( $R^2 = 0.64$ ). For the remaining missing data, regression equations were inaccurate and only accounted for less than 13% of the variance in the response ( $R^2$  ranging from .07 to .13). Two were missing ECR-R data, and one was missing ASRM data, mean imputation was used to input data. Mean imputation is a common imputation strategy that helps preserve data, unlike listwise deletion (Roth, 1994). Due to the small percentage of people for whom this method was used (1.5%) and due to the number of measures that it was used to complete (1-2 measures) it was expected that the mean imputation would not invalidate the data or analyses. In total, list wise deletion was used for 19 participants (8.84%) and other imputation strategies were used for the remaining 20 participants (9.3%).

### **Scoring.**

Each measure was scored on a continuum (see Table 2). The ASRM, CTQ-SF, and BDI-II were scored by summing the responses to each question. The ECR-R was scored by taking the

average of the anxiety and avoidance scores for each participant for each caregiver, so that four scores were obtained for each participant. The STRAIN summary scores were provided by UCLA stress lab. The STRAIN measures CM in less depth than the CTQ-SF. The creators of the STRAIN helped the PI in subtracting the CM severity variables from the overall stress severity score, so that CM was not measured twice. Psychometric properties and descriptive statistics of the measures can be found in Table 2. Effects of the order in which the measures were presented were tested for and not found  $ps > 0.05$ .

### **General Analysis Strategy.**

Moderation will be used to examine hypotheses one and two. Moderation analyses are used to determine whether the level of the moderator interacts with the main predictor variable to predict the outcome (Hayes, 2013). First, the independent predictors are centered by subtracting the mean value from each value. This step reduces multicollinearity among the variables and makes the results more easily interpreted. Next, the interaction terms are calculated by multiplying the two independent variables. Then the variables are entered into a stepwise regression model. First the main independent variable is entered, next the proposed moderator is entered; finally, the interaction term is entered. If the final step is significant it indicates that the proposed moderator is a moderator of the relationship between the independent and dependent variable (Hayes, 2013).

### **Preliminary Analyses.**

Summary statistics for the demographic variables were calculated and listed in Table 1. Demographic variables were preliminarily examined through *t*-tests, ANOVA, and correlation. BDI-II scores were higher for females ( $M = 16.86$ ,  $SD = 12.54$ ), than males ( $M = 12.50$ ,  $SD = 10.36$ ),  $t(194) = -2.66$ ,  $p = .008$ . The homogeneity of variance assumption was violated for the



ANOVA comparing ethnicities on the BDI-II. While *Welch's*  $F(5, 15.170) = 3.502, p = 0.03$  indicated that there is a significant difference between some combination of ethnicities, Games-Howell post hoc tests indicated no pairwise differences among ethnicities. BDI-II scores were not different among socioeconomic statuses  $F(8, 187) = 1.65, p = .114$ . ASRM score was not correlated with BDI-II score,  $r = -.13, p = .067$ .

An ANOVA indicated significant differences in BDI-II scores based on hearing status,  $F(2, 192) = 9.06, p < .001$ . (hearing, deaf, or hard of hearing) Post-hoc Scheffé comparisons revealed that hearing participants ( $M = 13.65, SD = 11.07$ ) scored significantly lower than hard of hearing (HOH) participants ( $M = 30.00, SD = 14.84; p = .001$ ) on the BDI-II. However, there was no difference between hearing and deaf participants, or deaf and HOH participants.

The number of reported diagnoses, excluding depression, was significantly correlated with BDI-II score  $r = .37, p < .001$ ). A similar approach was used to examine whether reported number of biological relative diagnoses predicted BDI-II score. Family diagnoses were also correlated with BDI-II score  $r = .21, p < .01$ . *Welch's*  $F(2, 34.63) = 16.86, p < .001$  was used to examine the difference among participants receiving different types of treatment. Games-Howell post hoc tests revealed that individuals reporting no treatment ( $M = 12.06, SD = 10.14$ ) scored significantly lower on the BDI-II than those who reported receiving one treatment ( $M = 20.16, SD = 13.70; p = .005$ ), or two treatments ( $M = 25.13, SD = 9.51; p < .001$ ). Treatments were analyzed as a categorical variable because the difference between receiving none, 1 treatment, and 2 treatments is not a standard unit of measurement.

Gender, ethnicity, hearing status, SES, number of treatments, number of diagnoses, and ASRM score were examined as potential covariates. Step AIC and Best Subsets Regression analyses of all these potential covariates indicated the inclusion of ASRM score, gender,

ethnicity, treatment types, diagnosis total, and hearing status. These are the covariates included in the inferential analyses.

### **Inferential Analyses.**

To test hypothesis one, that attachment would moderate the relationship between CM and depression, one stepwise linear regression was performed for primary caregiver and another for secondary caregiver. First, the CM and attachment scores (anxiety and avoidance) were centered about their mean. The interaction term was calculated by multiplying the centered scores together (CTQ x Anxiety and CTQ x Avoidance). In the first step of the regression model the covariates (gender, ethnicity, hearing status, number of treatments, reported diagnoses, and ASRM score) were entered. The centered CTQ-SF score was entered in the second step. The third step involved adding the two centered ECR-R scores, anxiety and avoidance with the respective caregiver. In the final step the interaction terms of the centered scores, were entered (i.e. CTQ x Primary Caregiver Avoidance, CTQ x Secondary Caregiver Avoidance).

Anxiety with Primary Caregiver was a significant moderator of the relationship between CM and depression. Moderation in the full model was significant,  $F(2, 184) = 4.94, p = .008, R^2 = .44, R^2_{adj} = .40$ . Outliers ( $n = 6$ ) were removed from the full model until no outliers remained, the moderation step was not significant,  $F(2, 178) = 2.64, p = .074, R^2 = .50, R^2_{adj} = .47$  (see Table 3). This model was reduced using terms that were significant at  $p < 0.05$ , resulting in the final reduced model,  $F(1, 184) = 4.98, p = .027, R^2 = .49, R^2_{adj} = .48$  (see Table 4). In this final model the moderation was significant, but only for anxious attachment to primary caregiver. The effect size for the interaction term was small and was calculated using Cohen's  $f^2$  for local effect size (Cohen's  $f^2 = .027$ ; Selya, Rose, Dierker, Hedeker, & Mermelstein, 2012). A graph depicting the moderation relationship can be found in Appendix C (Figure C1). While there were no

outliers in this final model, graphs indicated extreme values, so Cook's distance and high leverage points were examined.

Data points that exceed the acceptable Cook's Distance value ( $4 \div N$ ), and high leverage value ( $(2p + 2) \div N$ , where  $p$  is the number of predictors) were removed to see if this changed the significance of the model (Altman & Krzywinski, 2016). Removal of these points ( $n = 25$ ) did not change the overall significance of the model  $F(1, 160) = 5.55, p = .020, R^2 = .46, R^2_{adj} = .45$ . Since the model remained significant with the high influence points removed, and there was no evidence that the 25 individuals were not a part of the intended population, the final model included the high influence points. It is reasonable to assume that when studying constructs like CM there may be individuals who were exposed to extreme levels of CM compared to others in the same demographic.

Neither anxious or avoidant attachment with secondary caregiver were moderators of the relationship between CM and depressive symptoms. Three participants who reported not having a secondary caregiver were eliminated from the analysis. The full model was not significant,  $F(2, 181) = .47, p = .626, R^2 = .39, R^2_{adj} = .35$ . After removing outliers ( $n = 5$ ), neither anxious or avoidant attachment with secondary caregiver were moderators of the relationship between CM and depressive symptoms  $F(2, 176) = .45, p = .64, R^2 = .46, R^2_{adj} = .43$  (see Table 5). There were many high leverage and high influence points in this model ( $n = 25$ ). When they were removed along with one additional outlier, moderation by anxious attachment to secondary caregiver remained insignificant,  $F(2, 150) = 2.702, p = .070, R^2 = .38, R^2_{adj} = .34$ .

The second hypothesis, that stress severity would moderate the relationship between CM and depression, was tested in the same way. First, the CM and stress severity scores were centered about their mean. These two centered scores were multiplied to get their interaction term. The

same covariates were entered in the first step. The centered CM score was entered in the second step. Stress severity centered was entered in the third step. The last step involved entering the CTQ-SF x Stress Severity score. In the full model the moderation was significant,  $F(1, 186) = 5.79, p = .017, R^2 = .41, R^2_{adj} = .38$ . Moderation remained significant when outliers were removed (see Table 6). However, after the only two high leverage and high influence points were removed the model was not significant. While demographically these two individuals were part of the intended population, their extreme scores affected the significance of the entire model, thus they were excluded from the final model,  $F(1, 182) = .32, p = 0.570, R^2 = .48, R^2_{adj} = .47$  (see Table 7). The main effect of stress severity was significant, over and above the effect of CM,  $F(1, 183) = 8.16, p = 0.005, R^2 = .48, R^2_{adj} = .47$ . However, the interaction of stress severity and CM was not significant. The local effect size of the main effect of stress was small (Cohen's  $f^2$  for local effect size = .04).

The assumptions of regression, linearity, independence, constant variance, and normality, were checked for each model (Dean & Voss, 1999). Linearity was examined by plotting a scatterplot of the BDI-II scores versus the continuous independent variables. All graphs indicated that a linear relationship was probable. No quadratic or cubic patterns were observed. Each model was run with and without outliers to see if the significance of the model changed. Independence and constant variance of the error terms was evaluated by plotting graphs of the residuals versus the variables in the model. The errors were not related to the values of the variables in the model. The residuals appeared homoscedastic in each graph. Normality of the error variables was assessed by examining the normal probability plot and histogram of the standardized residuals. These plots indicated that the residuals were approximately normally distributed (Dean & Voss, 1999).

**STRAIN Descriptive Statistics.**

One hundred and eighty-two participants completed the STRAIN, of those 176 also completed the demographic measures. Descriptive statistics were calculated for those who completed the STRAIN, broken down by demographic variables (see Table 8;  $n = 176$ ). Females reported encountering more stressful events in terms of both quantity and severity, than males. Counts and severity of stressors differed among ethnic and racial groups. Individuals who identified as White or Asian reported the least amount of stressors and less total severity. Individuals who reported being hard of hearing endorsed more stressful events and higher average severity than those who were deaf or hearing. In general, those in higher SES brackets reported fewer events and reduced severity compared to those in lower SES brackets.

The current sample reported more acute life events, than chronic stressors, however the severity of chronic stressors was higher than the severity of the acute life events (see Table 9;  $n = 182$ ). More events were reported in adulthood than in early life (prior to age 18). Participants reported the highest number and severity of stressful events in the domain of relationships, specifically, relationships not involving their romantic partner. The social-psychological characteristic with the highest count and severity was interpersonal loss.

**Discussion**

Hypothesis one was partially supported, anxious attachment to primary caregivers moderated the relationship between CM and depression. Avoidant attachment with either caregiver was not a moderator of the relationship between CM and depression. There was no support for the second hypothesis regarding stress severity as a moderator of the relationship between CM and depression, however, the main effect of stress severity was significant over and above the effect of CM.

**Attachment**

It was expected that attachment to caregivers would influence the relationship between CM and depressive symptoms. This hypothesis was partially supported in that anxious attachment to primary caregivers was a moderator of the relationship between CM and depressive symptomatology. High levels of anxious attachment interacted with high levels of CM resulting in high depressive symptomatology. Similarly, low levels of anxious attachment interacted with low levels of CM to predict low scores on the BDI-II. The same relationship was not found with secondary caregivers. Avoidant attachment to either caregiver had no main or moderating effect. These findings are interesting and provide further evidence that anxious and avoidant attachment may be related to psychopathology in different ways. Attachment style was expected to be a moderator due to its relation to emotion regulation.

Among infants with secure attachments, such as those low in anxiety and avoidance, caregivers both soothe and stimulate the infant (van der Kolk & Fisler, 1994). As the child ages, she/he learns to self-soothe and how to engage in stimulating activities independently. In the absence of a secure attachment, the child is left feeling vulnerable and unable to use the caregiver to help regulate his or her emotional state (van der Kolk & Fisler, 1994). Research has shown that children who have secure attachment relationships are better at identifying emotions, managing emotions, and use more adaptive emotion regulation strategies (Brumariu, 2015). Alternatively, those with insecure attachments may develop maladaptive ways of managing their emotions resulting in emotion dysregulation and this may lead to psychopathology (Malik et al., 2015; van der Kolk & Fisler, 1994). These early attachment relationships have implications for attachment to others later in life. Studies have shown that attachment styles remain relatively

stable from childhood to adulthood regardless of the relationship (Hamilton, 2000; Waters et al., 2000; Fraley et al., 2011), and these attachment styles have implications for mental health.

Insecure attachment styles in adolescents and adults have been associated with depression across several studies. Lee and Hankin (2009) conducted a prospective longitudinal study with an adolescent population. They found that avoidant and anxious attachments to parents and peers were significantly associated with later depressive symptoms. Similarly, Hankin (2005) found that insecure adult attachment style mediated the association between EA and depression in a college student population. Bifulco, Moran, Ball and Bernazzani (2002) studied community samples of women who were vulnerable to depression and non-vulnerable controls, they found that insecure attachment styles were associated with depression assessed over a 12 month period. Bifulco et al. (2006) found that insecure attachment style predicted major depression in women. In a review by Malik et al. (2015), emotion regulation mediated the association between attachment and depression in adults. Studies indicate that insecure attachment styles are common among individuals with depression and that these associations may be related to emotion dysregulation. The present study suggests that the two dimensions of adult attachment, anxiety and avoidance, may be related to depressive symptoms in different ways.

The ECR-R measures attachment in two dimensions anxiety and avoidance. Anxiety refers to a fear of abandonment, which may be the consequence of a belief that oneself is unworthy of love (Gillath, Karantzas, & Fraley, 2016; Bartholomew and Horowitz, 1991). Avoidance refers to a fear of closeness and depending on others, that may stem from a belief that others are untrustworthy and unavailable (Gillath, Karantzas, & Fraley, 2016; Bartholomew and Horowitz, 1991). In the context of the present study, fears relating to unworthiness and abandonment regarding one's primary caregiver affected the relationship between CM and depression, while

concerns about closeness and dependence did not affect this relationship. These two attachment dimensions are related to how individuals react to threat (Ein-Dor, Mikulincer, Doron, & Shaver, 2010).

Since individuals who are high in avoidance want to avoid closeness and dependence, they also try to confront threat independently, without the help of others (Ein-Dor et al., 2010). These individuals try to reduce the seriousness of threat and deactivate emotions in response to threat. Alternatively, individuals high in anxious attachment tend to rely on others for help when they feel threatened, thus they engage in hyperactivation of emotions in response to threat, in the hopes of getting others to help them. This emotional overarousal leads to the use of ineffective emotion based coping strategies (Ein-Dor et al., 2010). Dysregulation of negative affect may lead to mood disorders (Hofmann et al., 2012). This hyperactivation of emotions during threats may relate to the emotion dysregulation seen in individuals with depression. Emotion dysregulation may have a complex association with depression in which it contributes to the development of depression as well as assists in the maintenance of depression.

Given the information that those who are high in avoidant attachment do not react emotionally to threat, and tend to downplay the seriousness of threat, it might be expected that avoidant attachment would moderate the relationship between CM and depression in the opposite direction (i.e. high avoidance attenuates the effect of CM on depression). One reason this might not have been the case is that, individuals who report high levels of avoidant attachment tend to report other people as their primary attachment relationship later in life, while individuals high in anxious attachment still report their parents as their primary attachment relationship (Feeny, 2004; as cited in Ein-Dor et al., 2010). This may explain why avoidant attachment to caregivers was not a significant predictor or moderator of the relationship between CM and depression. The



present study may have found different results if participants were asked about their current most significant attachment relationship. Individuals with avoidant attachments to parents, may have a different attachment relationship (e.g. friend, romantic partner) to whom their attachment relationship is more significant in how they respond to threat. If this attachment relationship was assessed it is possible the results may have indicated a relationship between avoidant attachment and depressive symptoms.

Research has supported the notion that anxious attachment is related to depression in different ways than avoidant attachment. Jinyao et al. (2012) found that anxious attachment interacted with daily stressors to predict depression, however, avoidant attachment did not. Lee and Hankin (2009) found that dysfunctional attitudes and low self-esteem mediated the relationship between anxious attachment and depressive symptoms in adolescents. This result was not found for avoidant attachment (Lee & Hankin, 2009). Research suggests that there are important differences in the way that individuals high in anxious or avoidant attachment styles react to threat, and these emotional regulatory differences may impact vulnerability to depression.

Theoretically individuals can be high in both anxious and avoidant attachment, as these constructs are not mutually exclusive. However, in the analyses these constructs were treated as separate variables to provide a more accurate portrayal of the complexity of attachment. Through analyzing the construct of attachment in this way it is clearer that anxious and avoidant styles may have different effects on the development of psychopathology and symptomatology.

### **Stress**

The present study found that stress severity was a predictor of depression symptoms, above and beyond CM, however, stress was not a moderator of the relationship between CM and depressive symptoms. Negative life events, specifically those that occur in childhood, have been

associated with depression across several studies. Horesh et al. (2008) conducted a study examining stressful life events in individuals with borderline personality disorder, depression, and healthy controls. They found that those with depression reported fewer life events in childhood, however, they reported a higher proportion of loss related events, including death and separation events, in childhood than the two control groups. Similarly, in the year preceding their first depressive episode, individuals with depression reported a higher proportion of negative, loss related and separation events (Horesh et al., 2008).

Researchers have also examined the effects of stressful life events in addition to CM with respect to later risk for mood disorders. Horwitz, Spatz-Widom, McLaughlin and Raskin White (2001) conducted a large prospective study following up with adults 20 years after their experience of CM. They examined CM, stressful life events, and mental health outcomes. Researchers found that when they controlled for stressful life events, CM no longer had a large effect on mental health outcomes (Horwitz et al., 2001). This research suggests that additional stressful life events may be more predictive of psychopathology than CM itself. Additionally, a study by Dumont, Widom, and Czaja (2007) found that the number of stressful life events, in the past year, was negatively associated with resilience to psychopathology and other adverse outcomes after CM. Stressful events have also been found to mediate the relationship between EA and depression (Hankin, 2005). Stressful life events may be a risk factor for future psychopathology due to a process called stress sensitization.

Stress sensitization suggests that early life stress predisposes individuals to become more reactive to stress later in life (Hammen et al., 2000). The HPA axis, which regulates one's response and recovery to stress, develops throughout childhood, and environmental experiences guide and affect its development (Cicchetti & Toth, 2005; Doom, Cicchetti, & Rogosch, 2014;

Tarullo & Gunnar, 2006). Thus, experiences such as CM, and stressful life events, may cause dysregulation. Post (1992) proposed that this occurs due to changes in neurobiological factors that lessen resilience to stress.

Difficulties in responding to and recovering from stress appropriately may lead to chronic stress. Chronic stress can lead to the release of excessive amounts of cortisol, which can have negative impacts on health (Doom, Cicchetti, & Rogosch, 2014; Tarullo & Gunnar, 2006). Excess cortisol can adversely affect neurotransmitter systems in a plethora of ways (Daban et al., 2005). Excess cortisol can have a neurodegenerative effect, actually destroying neurons or affecting the way in which they function. In turn, this affects aspects of mood and cognition and these effects may account for some symptoms of mood disorders (Daban et al., 2005).

Individuals with a history of adversity in childhood are more likely to develop psychopathology, such as depression, after negative life events than individuals who did not experience adversity in childhood (McLaughlin et al., 2010). Adverse life events in childhood, such as CM, can have severe and long-lasting consequences by affecting the HPA axis, which can result in stress sensitization. The current results are in line with the stress sensitization hypothesis. Stress severity and CM had a cumulative effect on the model. Increased CM and more stress severity predicted higher depression scores. However, no moderation effect was found for stress severity.

The constructs of stress and CM are very complex and multifaceted. For instance, just a few of the many facets of CM are duration, severity, age at which the event occurred, and perpetrator relationship. The severity of stress is also very subjective and complex. The personal experience of a stressful event depends on many external (e.g. social support) and internal factors (e.g. coping). While the measures of CM and stress attempted to account for some of these factors, it

is nearly impossible to capture the complexity of these constructs. It is reasonable to assume that since these constructs are so complex, they don't interact in a predictable way, thus, no moderation effect was found in the present study.

### **Exploratory Analyses**

The descriptive statistics of the STRAIN revealed that women reported more stressful events and also reported higher total severity. This is consistent with previous literature suggesting that women report encountering more stressors, interpret stressors as more severe, and they cope with stress in more emotion focused ways than men, who cope in more active ways (Mayor, 2015; Matud, 2004). Gender and societal roles can explain many of the gender discrepancies in stress and coping. For example, men are typically in more high-status roles than women, these high-status roles allow men to have more control over what occurs, thus they may experience less stress (Mayor, 2015). Gender roles suggest that it is not acceptable for men to react emotionally, while women are permitted, and often expected, to react in emotional ways (Matud, 2004). This may be a reason for differences in coping strategies. The present data suggest that these societal norms and gender roles may continue to affect experiences of stress among males and females.

Individuals who reported being hard of hearing (HOH) reported more stressors and increased total severity compared to individuals who reported being hearing or Deaf. This is consistent with previous literature indicating that individuals who are HOH experience more trauma than hearing individuals, however, this contrasts with previous literature in that individuals who report being Deaf typically experience more trauma than those who are HOH (Shenkel et al., 2014). This is likely due to the small number of Deaf ( $n = 3$ ) and HOH ( $n = 6$ ) participants who completed the STRAIN. If more participants who identify as Deaf or HOH had participated the same pattern may have been found.

As socioeconomic status (SES) increased the count and severity of stressors decreased. Children and adolescents are affected by the SES in which they grow up, and it can have implications for their mental health and future stress exposure (Reiss, 2013). Previous studies have found that individuals who have higher SES experience less stressors, and less stress related health problems (Thoits, 2010). These individuals have more resources to both prevent and cope with stress.

Individuals reported more stressful events occurring in adulthood (18 and older), than in childhood. Participants also reported the majority of stressors as occurring due to relationships. This may be due to the transition to college that many of the individuals in the study recently experienced. The transition to college may result in a multitude of new stressful life events that had never been previously experienced. Concerns over finances, housing, relationships, classes, and having a greater responsibility for being self-sufficient may be stressful for individuals in this demographic. Individuals may also find it difficult to maintain old relationships and/or form new relationships. For many, it may be their first time living away from home, their parents and friends. This may be why participants reported the domain of relationships and the social-psychological characteristic of interpersonal loss at the most severe and common stressor.

### **Current Sample**

The sample in the present study was different than samples typically studied with regards to CM. This sample had very low scores on the CTQ-SF compared to clinical and community samples (MacDonald et al, 2016). In clinical samples across several studies ( $n = 5,429-5,876$ ) the mean CTQ-SF score was 45.91 ( $SD = 18.79$ ). In community samples ( $n = 12,432-12,915$ ) the mean CTQ-SF score was 38.78 ( $SD = 14.98$ ; MacDonald et al., 2016). The present sample had a mean CTQ-SF score of 13.04. This sample's low scores may be attributed to the demographics

of the sample. While this sample is different, it still provides important knowledge and insight into the effects of CM. Even in this population, with a low incidence of CM, an effect of CM on depressive symptomology was found. This speaks to the pervasive and deleterious effect that CM has regardless of one's demographics.

The mean BDI-II score in the current sample was 14.61, this score is indicative of mild depression (Wang & Gorenstein, 2013). A large proportion of the sample (44.39%; see Table 10), scored in the mild to severe depression range on the BDI-II (Wang & Gorenstein, 2011). Previous studies measuring depression in college students with the BDI-II have found slightly lower scores ( $M = 11.03$ ,  $SD = 8.17$ ,  $N = 414$ ; Storch, Roberti, & Roth, 2004). Whisman, Judd, Whiteford, and Gelhorn (2012) found a  $M = 9.27$  ( $SD = 8.07$ ) in a pooled sample of 7,369 students. The depression scores in the current sample may be a result of the self-selection of the participants. The study was advertised as "Childhood Adversity and Mental Health Outcomes". This title or the description of the study may have influenced individuals to participate who felt that they had mental health issues.

In terms of the ECR-R and STRAIN measures, it is difficult to compare this sample with other samples of college students. Studies using the ECR-R in this population have used it to measure attachment to romantic partners and friends, not parents. The STRAIN is a new measure, therefore, there are limited studies using it. Further research would be needed to compare this sample to other similar samples on these two measures.

### **Clinical Implications**

Interventions after occurrences of CM should focus on attachment relationships, specifically anxious attachment, and stressful life events. Strengthening the attachment relationship between caregiver and child can help the child develop emotion regulation and

increase feelings of security. While preventing stressful life events from occurring is a daunting, if not impossible, task, considerations should be made to reduce the chances of youth encountering extremely stressful events. Another area of intervention may be to teach youth healthy coping strategies to deal with the aftermath of a stressful life event. The results of the present study suggest that these interventions may help reduce depressive symptoms in young adults.

### **Limitations and Future Directions**

There are several limitations to the present study. Participants self-selected to participate in this study. This can result in a sampling bias in which the study may have appealed to individuals who did not experience high levels of adversity or vice versa. The study was conducted online thus participants were not taking the survey in the same environment. The time it took participants to take the survey varied widely, it is possible that some participants did not take adequate time to complete the survey accurately and honestly. The STRAIN takes more time as the participant endorses more items. It is possible that participants picked up on this and endorsed fewer items than they actually experienced. The CTQ-SF and the STRAIN were both measured retrospectively. Ideally, research questions such as these would be studied in a longitudinal design.

Additional research is needed to examine the adaptive facets of attachment styles that are typically thought of as maladaptive. Attachment anxiety and avoidance are typically conceptualized as hindrances to psychological well-being. However, evidence to the contrary exists suggesting that for adults, attachment avoidance may actually have benefits when it comes to mental health. Further research examining these constructs directly would be beneficial.

Stress is a construct that is studied extensively in the medical and psychological fields, however, across studies stress is measured and conceptualized in a plethora of different ways. This leads to challenges in replication, comparison, and the development of solid conclusions about the types of stress and its role in overall health. The use of a standard measure of stress that can be used across studies is warranted. Norms based off such a measure are also needed.

Further research elucidating risk and protective factors in the relation between CM and mental health outcomes is necessary to develop interventions. Longitudinal studies are needed to establish causality in these cases. Research and intervention on the environment in which CM is perpetrated is also needed for prevention of the occurrence of CM. While CM is a heavily studied topic in the field of psychology, it remains an unsolved problem in society.

### **Conclusions**

Anxious attachment to primary caregiver was identified as a moderator in the relationship between CM and depression. Anxious attachment interacted with CM resulting in increased depressive symptoms, however, avoidant attachment to caregivers was not related to outcomes of depressive symptoms. Literature on attachment styles often equates insecure attachment styles, overlooking their differing implications and outcomes. Research suggests that the different attachment styles may have adaptive facets (Ein-Dor et al., 2010). Results of the present study indicate that there are differences in the attachment dimensions' relations to depression.

Stress severity of life events had a main effect in the model, over and above CM. This result is in line with research suggesting that early adversity in addition to cumulative life stress can result in stress sensitization. The present study suggests that CM and stress are very complex constructs that don't interact in a predictable way to result in depressive symptomatology. More universal methods of measuring stress are needed for studies to be comparable and replicated.



This study expands upon previous literature by exploring the moderation effect of these variables, which, to the PIs knowledge, has not been done before. The results highlight the differences between the dimensions of attachment anxiety and attachment avoidance in adults. It also reaffirms the adverse effects of cumulative life stress on depressive symptomatology. Future longitudinal research is needed to further examine risk and protective factors in the relationship between CM and psychopathology.

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Table 1  
Demographic Characteristics of the Sample

| Characteristic                            | Count | (Percent) |
|---|-------|-----------|
| <b>Ethnicity</b>                          |       |           |
| Black                                     | 21    | (10.7)    |
| Asian                                     | 27    | (13.8)    |
| White                                     | 124   | (63.3)    |
| Hispanic/Latino                           | 8     | (4.1)     |
| American Indian/Alaskan Native            | 2     | (1.0)     |
| Indian                                    | 1     | (.5)      |
| Multiracial                               | 13    | (6.6)     |
| <b>Gender</b>                             |       |           |
| Male                                      | 101   | (51.5)    |
| Female                                    | 95    | (48.5)    |
| <b>Hearing Status</b>                     |       |           |
| Hearing                                   | 183   | (93.4)    |
| Deaf                                      | 6     | (3.1)     |
| Hard of Hearing                           | 7     | (3.6)     |
| <b>Number of Mental Health Treatments</b> |       |           |
| None                                      | 144   | (73.5)    |
| One Treatment                             | 36    | (18.4)    |
| Two Treatments                            | 16    | (8.2)     |
| <b>Number of Disorders</b>                |       |           |
| None                                      | 132   | (67.3)    |
| One                                       | 47    | (24.0)    |
| Two                                       | 15    | (7.7)     |
| Three                                     | 2     | (1.0)     |
| <b>Specific Disorders</b>                 |       |           |
| Anxiety                                   | 45    | (23.0)    |
| Bipolar Disorder                          | 1     | (0.5)     |
| PTSD                                      | 5     | (2.6)     |
| ASD                                       | 2     | (1.0)     |
| ADHD                                      | 22    | (11.2)    |
| Schizophrenia                             | 1     | (0.5)     |
| Other                                     | 7     | (3.6)     |

## SES

|                   |    |        |
|-------------------|----|--------|
| 0 - 24k           | 18 | (9.2)  |
| 25 - 49k          | 33 | (16.8) |
| 50 - 74k          | 32 | (16.3) |
| 75 - 99k          | 26 | (13.3) |
| 100 - 124k        | 32 | (16.3) |
| 125 - 149k        | 14 | (7.1)  |
| 150 - 174k        | 13 | (6.6)  |
| 175 - 199k        | 10 | (5.1)  |
| Greater than 200k | 18 | (9.2)  |

Table 2

*Psychometric Properties of Measured Variables*

| Variable              | <i>M</i> | <i>SD</i> | Cronbach's $\alpha$ | Range |      |
|-----------------------|----------|-----------|---------------------|-------|------|
| ASRM                  | 4.71     | 3.92      | 0.78                | 0     | 18   |
| CTQ-SF                | 13.04    | 13.50     | 0.94                | 0     | 72   |
| EA                    | 4.19     | 4.54      | 0.86                | 0     | 20   |
| EN                    | 4.69     | 4.26      | 0.89                | 0     | 20   |
| PA                    | 1.44     | 2.76      | 0.82                | 0     | 16   |
| PN                    | 1.70     | 2.70      | 0.75                | 0     | 15   |
| SA                    | 1.02     | 2.63      | 0.90                | 0     | 14   |
| Minimization<br>Scale | 0.55     | 0.92      | 0.87                | 0     | 3    |
| ECR-R                 |          |           |                     |       |      |
| Primary Caregiver     |          |           | 0.96                |       |      |
| Anxiety               | 2.33     | 1.08      | 0.92                | 1.00  | 6.22 |
| Avoidance             | 2.79     | 1.46      | 0.97                | 1.00  | 6.72 |
| Secondary Caregiver   |          |           | 0.96                |       |      |
| Anxiety               | 2.48     | 1.12      | 0.89                | 1.00  | 6.33 |
| Avoidance             | 3.38     | 1.62      | 0.97                | 1.00  | 7.00 |
| Stress Severity       | 25.81    | 19.55     |                     | 0     | 114  |
| BDI-II                | 14.61    | 11.65     | 0.93                | 0     | 55   |

Table 3

*Full Model for Primary Caregiver Attachment as a Moderator*

| Predictor  | $\Delta R^2$      | $\beta$ |
|--|-------------------|---------|
| Step 1   | .302***           |         |
| Covariates <sup>a</sup>                            |                   |         |
| Step 2   | .157***           |         |
| CTQ-SF Centered                                    |                   | .384**  |
| Step 3   | .029**            |         |
| ECR-R Primary Anxiety Centered                     |                   | .274**  |
| ECR-R Primary Avoidance Centered                   |                   | -.062   |
| Step 4   | .015 <sup>t</sup> |         |
| CTQ-SF Centered x ECR-R Primary Anxiety Centered   |                   | .066    |
| CTQ-SF Centered x ECR-R Primary Avoidance Centered |                   | -.196*  |
| Total $R^2$  | .503              |         |
| Adjusted $R^2$                                     | .472              |         |
| $n$  | 190               |         |

<sup>t</sup>  $p < .10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

<sup>a</sup> Covariates include Gender, Ethnicity, Hearing Status, Number of Treatments, Number of Diagnoses, ASRM Score

Table 4

*Reduced Model for Primary Caregiver Attachment as a Moderator*

| Predictor      |  | $\Delta R^2$ | $\beta$ |
|----------------|--|--------------|---------|
| Step 1         |  | .287***      |         |
|                | Covariates <sup>a</sup>                          |              |         |
| Step 2         |  | .163***      |         |
|                | CTQ-SF Centered                                  |              | .397*** |
| Step 3         |  | .031**       |         |
|                | ECR-R Primary Anxiety Centered                   |              | .237**  |
| Step 4         |  | .014*        |         |
|                | CTQ-SF Centered x ECR-R Primary Anxiety Centered |              | -.166*  |
| Total $R^2$    | .494   |              |         |
| Adjusted $R^2$ | .480   |              |         |
| $n$            | 190  |              |         |

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ <sup>a</sup> Covariates include Hearing Status, Number of Treatments

Table 5

*Full Model for Secondary Caregiver Attachment as a Moderator*

| Predictor  | $\Delta R^2$ | $\beta$ |
|--|--------------|---------|
| Step 1   | .304***      |         |
| Covariates <sup>a</sup>                              |              |         |
| Step 2   | .148***      |         |
| CTQ-SF Centered                                      |              | .412*** |
| Step 3   | .007         |         |
| ECR-R Secondary Anxiety Centered                     |              | .119    |
| ECR-R Secondary Avoidance Centered                   |              | -.035   |
| Step 4   | .003         |         |
| CTQ-SF Centered x ECR-R Secondary Anxiety Centered   |              | -.898   |
| CTQ-SF Centered x ECR-R Secondary Avoidance Centered |              | -.056   |
| Total $R^2$  | .463         |         |
| Adjusted $R^2$                                       | .429         |         |
| $n$  | 188          |         |

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ <sup>a</sup> Covariates include Gender, Ethnicity, Hearing Status, Number of Treatments, Number of Diagnoses, ASRM Score



Table 6

*Full Model for Stress Severity as a Moderator*

| Predictor   | $\Delta R^2$      | $\beta$ |
|---|-------------------|---------|
| Step 1  | .302***           |         |
| Covariates <sup>a</sup>                           |                   |         |
| Step 2  | .157***           |         |
| CTQ-SF Centered                                   |                   | .435*** |
| Step 3  | .010 <sup>t</sup> |         |
| STRAIN Stress Severity Centered                   |                   | .157*   |
| Step 4  | .012*             |         |
| CTQ-SF Centered x STRAIN Stress Severity Centered |                   | -.134*  |
| Total $R^2$                                       | .480              |         |
| Adjusted $R^2$                                    | .454              |         |
| <i>n</i>  | 190               |         |

<sup>t</sup>  $p < .10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

<sup>a</sup> Covariates include Gender, Ethnicity, Hearing Status, Number of Treatments, Number of Diagnoses, ASRM Score

Table 7

*Reduced Model for Stress Severity as a Moderator*

| Predictor      |   | $\Delta R^2$ | $\beta$ |
|----------------|---|--------------|---------|
| Step 1         |   | .296***      |         |
|                | Covariates <sup>a</sup>                           |              |         |
| Step 2         |   | .164***      |         |
|                | CTQ-SF Centered                                   |              | .379*** |
| Step 3         |   | .023**       |         |
|                | STRAIN Stress Severity Centered                   |              | .180**  |
| Step 4         |   | .001         |         |
|                | CTQ-SF Centered x STRAIN Stress Severity Centered |              | -.035   |
| Total $R^2$    | .484  |              |         |
| Adjusted $R^2$ | .470  |              |         |
| <i>n</i>       | 188   |              |         |

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

<sup>a</sup> Covariates include Hearing Status, Number of Treatments

Table 8

*STRAIN Descriptive Statistics by Demographic Variables*

| STRAIN Variable  | Demographic Variable | Mean  | SD    | n   |
|--|----------------------|-------|-------|-----|
| Total Count of Stressors   |                      | 21.76 | 13.77 | 176 |
| Total Severity of Stressors  |                      | 50.53 | 33.03 | 176 |
| Gender   |                      |       |       |     |
| Total Count of Stressors   | Male                 | 18.09 | 10.13 | 93  |
|  | Female               | 25.19 | 14.98 | 83  |
| Total Severity of Stressors  | Male                 | 41.71 | 24.63 | 93  |
|  | Female               | 58.82 | 35.95 | 83  |
| Ethnicity  |                      |       |       |     |
| Total Count of Stressors   | Black                | 25.93 | 14.34 | 14  |
|  | Asian                | 15.17 | 11.06 | 23  |
|  | White                | 20.20 | 11.65 | 116 |
|  | Hispanic/Latino      | 30.50 | 21.68 | 8   |
|  | Multiracial          | 32.54 | 13.13 | 13  |
| Total Severity of Stressors  | Black                | 57.21 | 28.07 | 14  |
|  | Asian                | 33.57 | 25.49 | 23  |
|  | White                | 47.68 | 29.17 | 116 |
|  | Hispanic/Latino      | 70.13 | 51.38 | 8   |
|  | Multiracial          | 76.85 | 33.30 | 13  |
| American Indian/Alaskan Native ( $n = 1$ ) and Indian ( $n = 1$ ) were omitted from the analyses |                      |       |       |     |
| Hearing Status   |                      |       |       |     |
| Total Count of Stressors   | Hearing              | 20.80 | 12.61 | 167 |
|  | Deaf                 | 21.33 | 14.57 | 3   |
|  | Hard of Hearing      | 39.17 | 16.02 | 6   |
| Total Severity of Stressors  | Hearing              | 48.52 | 30.41 | 167 |
|  | Deaf                 | 42.00 | 33.72 | 3   |
|  | Hard of Hearing      | 88.67 | 43.20 | 6   |
| SES  |                      |       |       |     |
| Total Count of Stressors   | < 24k                | 27.23 | 16.04 | 13  |
|  | 25-49k               | 24.10 | 10.65 | 30  |

|                             |          |       |       |    |
|-----------------------------|----------|-------|-------|----|
|                             | 50-74k   | 27.00 | 16.19 | 30 |
|                             | 75-99k   | 18.96 | 11.83 | 24 |
|                             | 100-124k | 17.87 | 11.83 | 30 |
|                             | 125-149k | 19.00 | 12.85 | 14 |
|                             | 150-174k | 19.18 | 9.90  | 11 |
|                             | 175-199k | 15.00 | 8.49  | 10 |
|                             | > 200k   | 19.14 | 13.34 | 14 |
| Total Severity of Stressors |          |       |       |    |
|                             | < 24k    | 61.38 | 37.52 | 13 |
|                             | 25-49k   | 56.43 | 28.32 | 30 |
|                             | 50-74k   | 63.17 | 37.63 | 30 |
|                             | 75-99k   | 45.79 | 29.53 | 24 |
|                             | 100-124k | 41.10 | 24.76 | 30 |
|                             | 125-149k | 43.07 | 28.96 | 14 |
|                             | 150-174k | 45.73 | 33.99 | 11 |
|                             | 175-199k | 36.00 | 28.96 | 10 |
|                             | > 200k   | 41.21 | 28.71 | 14 |

One outlier was removed from these descriptive statistics.

Table 9

*Descriptive Statistics of STRAIN: Count, Severity, and Domains*

|                             | Count       |           | Severity    |           |
|-----------------------------|-------------|-----------|-------------|-----------|
|                             | <i>Mean</i> | <i>SD</i> | <i>Mean</i> | <i>SD</i> |
| Acute Life Events           | 11.51       | 9.15      | 21.11       | 15.14     |
| Chronic Difficulties        | 10.72       | 6.69      | 30.55       | 21.57     |
| Time Limited Events         |             |           |             |           |
| Prenatal                    | 0.86        | 1.42      |             |           |
| Early Adversity             | 5.85        | 4.96      | 15.16       | 12.78     |
| Adulthood                   | 8.34        | 8.61      | 18.86       | 19.84     |
| Domain                      |             |           |             |           |
| Housing                     | 1.16        | 2.10      | 2.42        | 3.70      |
| Education                   | 0.03        | 0.26      | 0.05        | 0.43      |
| Work                        | 0.37        | 0.74      | 1.20        | 2.83      |
| Treatment/Health            | 2.18        | 2.37      | 5.85        | 6.21      |
| Marital/Partner             | 2.03        | 2.23      | 5.74        | 5.32      |
| Reproduction                | 0.04        | 0.19      | 0.15        | 0.77      |
| Financial                   | 0.55        | 0.78      | 1.65        | 2.35      |
| Legal/Crime                 | 0.04        | 0.19      | 0.13        | 0.70      |
| Other Relationships         | 3.14        | 2.76      | 8.63        | 7.22      |
| Death                       | 1.25        | 1.36      | 2.51        | 2.59      |
| Life-Threatening Situations | 1.70        | 2.58      | 3.81        | 4.89      |
| Possessions                 | 0.15        | 0.53      | 0.32        | 1.06      |
| Characteristic              |             |           |             |           |
| Interpersonal Loss          | 3.89        | 2.77      | 10.14       | 7.27      |
| Physical Danger             | 2.54        | 3.76      | 5.82        | 8.04      |
| Humiliation                 | 2.19        | 2.28      | 5.30        | 4.75      |
| Entrapment                  | 1.15        | 1.13      | 3.89        | 4.17      |
| Role Change/Reversal        | 3.42        | 3.49      | 8.87        | 8.04      |

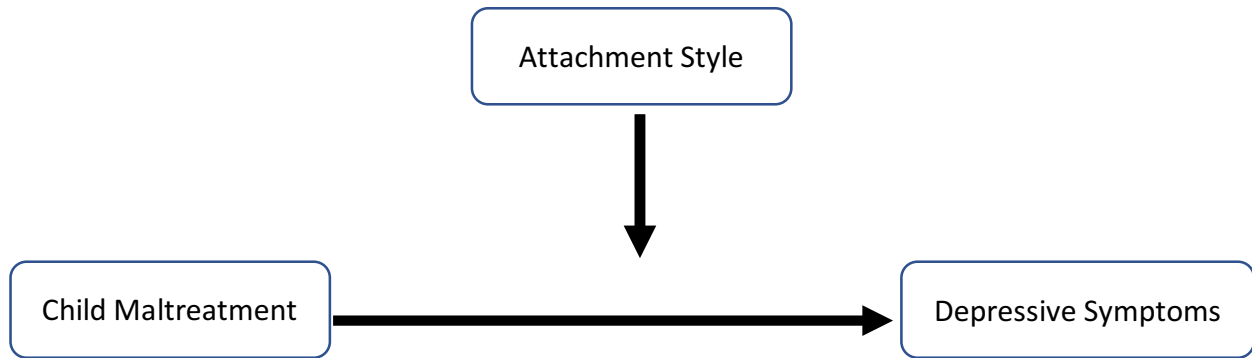
*N* = 182

Table 10

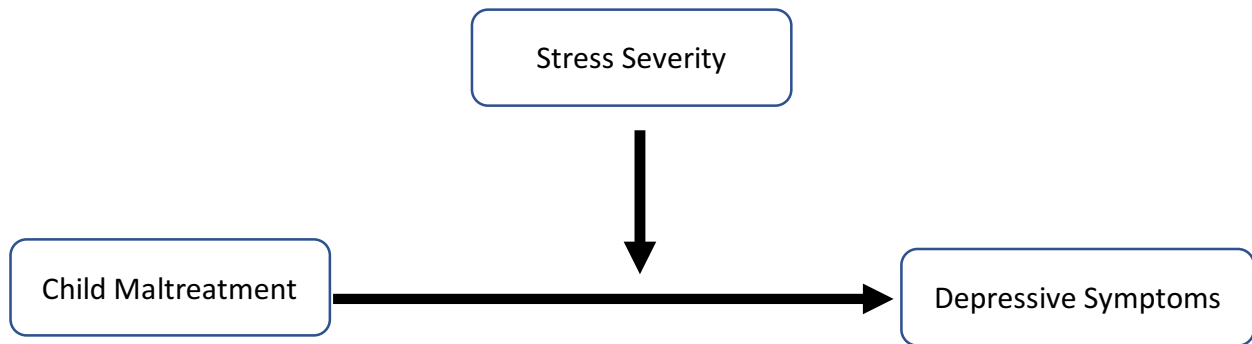
*BDI-II Scores with Categories*

| <u>BDI-II Score</u> | <u>Count</u> | <u>Percent</u> |
|---------------------|--------------|----------------|
| Minimal (0-13)      | 109          | 55.61          |
| Mild (14-19)        | 33           | 16.84          |
| Moderate (20-28)    | 28           | 14.29          |
| Severe (29-63)      | 26           | 13.27          |

Appendix A  
Proposed Moderation Models



*Figure A1.* Proposed Moderation Model for Attachment.  
Attachment is expected to moderate the relationship between CM and Depressive symptoms.



*Figure A2.* Proposed Moderation Model for Stress severity of Life Events.  
Stress Severity is expected to moderate the relationship between CM and Depressive symptoms.

Appendix B  
Demographic Survey

D.1 What is your age?

D.2 What sex were you assigned at birth?

Male

Female

D.3 How do you describe yourself?

Male

Female

Transgender

Other \_\_\_\_\_

D.4 What is your major?

D.5 What is your ethnicity? (Please select all that apply)

Black or African American

Asian

Native Hawaiian or Pacific Islander

White/Caucasian

Hispanic or Latino

American Indian or Alaskan Native

Prefer not to answer

Other (Please Specify) \_\_\_\_\_

D.HEAR.5.5 What is your hearing status?

Hearing

Deaf

Hard of Hearing



D.6 Which of the following is the year level in college? (i.e. Freshman is 1st year)

1st

2nd

3rd

4th

5th

6 +

D.7 Who was your primary caregiver in childhood? Your primary caregiver is the individual who took on the most responsibility for seeing that you were cared for (i.e. fed you, made sure you were ready for school, put you to bed, took you to the doctors).

Biological Mother

Biological Father

Stepmother

Stepfather

Grandmother

Grandfather

Other (please specify) \_\_\_\_\_

D.8 What is the highest level of education your primary caregiver completed?

Elementary/Middle School

Some High School (did not graduate)

High School

Some College (did not graduate)

College

Masters Degree

Doctoral Degree

D.9 What is your primary caregiver's occupation?

D.10 Who was your secondary caregiver in childhood? Your secondary caregiver is the individual who may have been less involved in seeing that you were cared for. This may be the

caregiver who worked more or was absent more often. Alternatively, this may be a person who cared for you when your primary caregiver was unavailable (i.e. a grandparent).

Biological Mother

Biological Father

Stepmother

Stepfather

Grandmother

Grandfather

Other (please specify) \_\_\_\_\_

D.11 What is the highest level of education your secondary caregiver completed?

Elementary/Middle School

Some High School (did not graduate)

High School

Some College (did not graduate)

College

Masters Degree

Doctoral Degree

D.12 What is your secondary caregiver's occupation?

D.13 What was your approximate average annual household income? (If not certain, give your best guess)

Less than \$25,000

\$25,000 - \$49,999

\$50,000 - \$74,999

\$75,000 - \$99,999

\$100,00-\$124,999

\$125,000 - \$149,999

\$150,000 - \$174,999

\$175,000 - \$199,999

Greater than \$200,000

D.14 Have you been diagnosed with any of the following? Please check all that apply.

Depression

Anxiety

- Bipolar Disorder
- Post Traumatic Stress Disorder (PTSD)
- Autism Spectrum Disorder
- Attention Deficit Hyperactivity Disorder (ADHD)
- Schizophrenia
- Other \_\_\_\_\_
- None

Q158 At approximately what age were you diagnosed with:

- Depression \_\_\_\_\_
- Anxiety \_\_\_\_\_
- Bipolar Disorder \_\_\_\_\_
- Post Traumatic Stress Disorder (PTSD) \_\_\_\_\_
- Autism Spectrum Disorder \_\_\_\_\_
- Attention Deficit Hyperactivity Disorder (ADHD) \_\_\_\_\_
- Schizophrenia \_\_\_\_\_
- Other \_\_\_\_\_
- None \_\_\_\_\_

D.15 Are you currently receiving any treatment for any diagnoses? (Select all that apply)

- Therapy
- Medication
- Other \_\_\_\_\_
- None

D.16 Have you ever abused a substance?

- Yes
- No

D.17 Have you ever attended counseling or psychotherapy for something not listed above?

- Yes
- No

D.18 Are you currently attending counseling/psychotherapy?

Yes

No

D.19 Has your biological mother ever been diagnosed with any of the following? Please check all that apply.

Depression

Anxiety

Bipolar Disorder

Post Traumatic Stress Disorder (PTSD)

Autism Spectrum Disorder

Attention Deficit Hyperactivity Disorder (ADHD)

Schizophrenia

Other \_\_\_\_\_

I don't know.

None

D.20 Has your biological father ever been diagnosed with any of the following? Please check all that apply.

Depression

Anxiety

Bipolar Disorder

Post Traumatic Stress Disorder (PTSD)

Autism Spectrum Disorder

Attention Deficit Hyperactivity Disorder (ADHD)

Schizophrenia

Other \_\_\_\_\_

I don't know.

None

D.21 Has your biological sibling(s) ever been diagnosed with any of the following? Please check all that apply.

Depression

Anxiety

Bipolar Disorder

Post Traumatic Stress Disorder (PTSD)

Autism Spectrum Disorder

Attention Deficit Hyperactivity Disorder (ADHD)

Schizophrenia

Other \_\_\_\_\_

I don't know.

None

D.22 Have any of your other biological relatives ever been diagnosed with any of the following? Please check all that apply.

Depression

Anxiety

Bipolar Disorder

Post-Traumatic Stress Disorder (PTSD)

Autism Spectrum Disorder

Attention Deficit Hyperactivity Disorder (ADHD)

Schizophrenia

Other \_\_\_\_\_

I don't know.

None

Appendix C

Moderation Graph of Anxious Attachment with Primary Caregiver

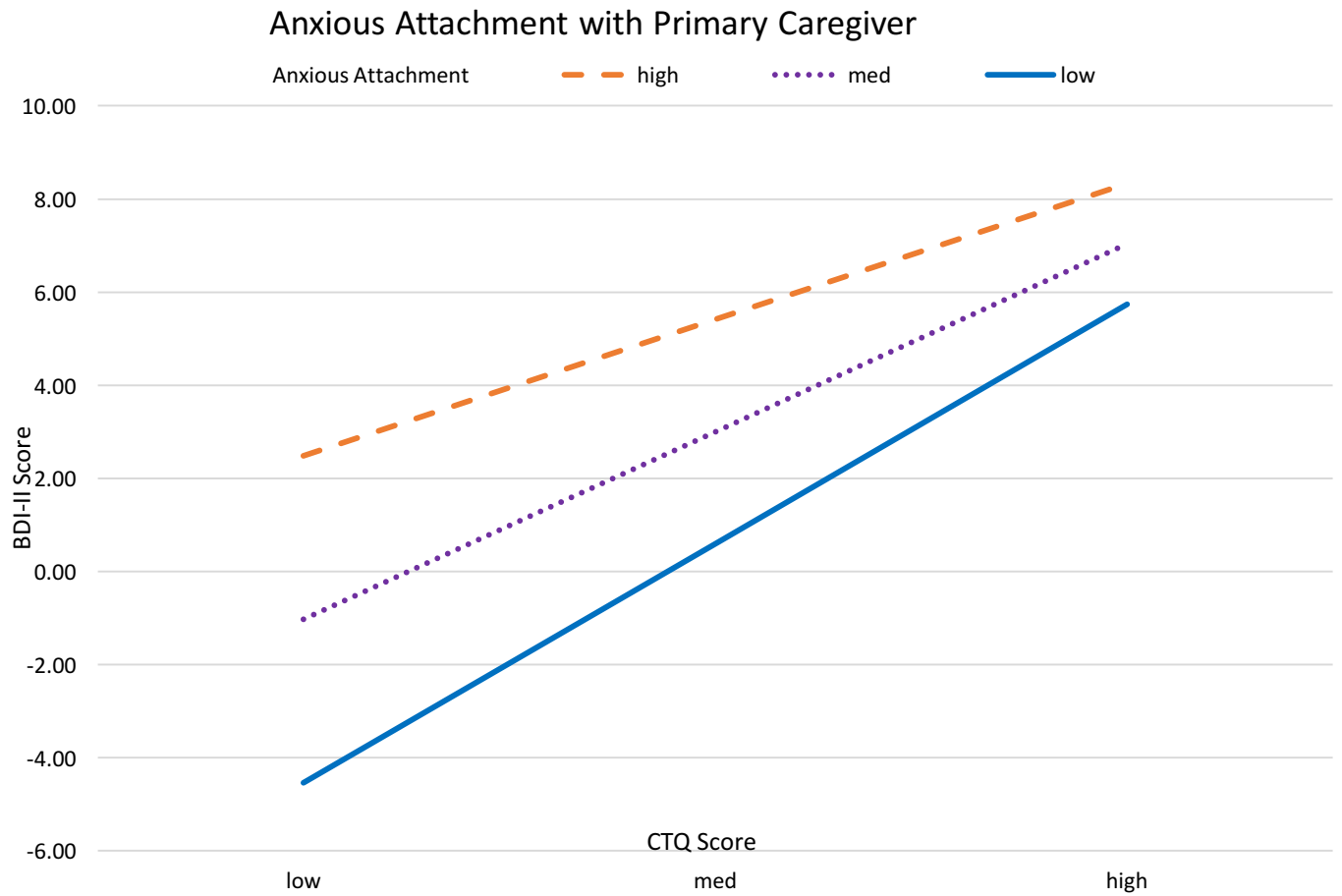


Figure C1. Moderation Graph for Anxious Attachment to Primary Caregiver.

Graph depicts the moderation effect of anxious attachment with primary caregiver on the relationship between CTQ score and BDI-II score. The graph indicates that the level of CM interacts with the level of anxious attachment with primary caregiver to predict depression.

Higher levels of attachment anxiety interact with higher levels of CM to predict higher levels of depressive symptoms and vice versa.