Fall 12-7-2020

The Association Between Child Maltreatment and Impulsivity, Emotional Adjustment, and Substance Use Among First-year Male College Students

Katherine A. Moran
Georgia State University

Follow this and additional works at: https://scholarworks.gsu.edu/iph_theses

ABSTRACT

THE ASSOCIATION BETWEEN CHILD MALTREATMENT AND IMPULSIVITY, EMOTIONAL ADJUSTMENT, AND SUBSTANCE USE AMONG FIRST YEAR MALE COLLEGE STUDENTS

By

KATHERINE ANN MORAN

12/15/2020

Child maltreatment is common in the United States and can cause severe physical and mental illness well into young adulthood. Some studies have shown that child maltreatment may increase impulsivity and emotional adjustment among adolescents but there has been little focus on these factors among college students. The purpose of this study was to examine the relationships between child maltreatment (physical and sexual abuse and witnessing domestic abuse) on impulsivity and emotional adjustment. Additionally, this study assessed whether impulsivity or emotional adjustment mediate the relationship between child maltreatment and substance use and binge drinking. This study analyzed secondary data from a diverse group of male college freshmen from 30 colleges and Universities in Georgia (51% White, 19% Black/African American). Univariate analyses using SAS 9.4 found that of the 1,129 participants between the ages of 18 and 24, 15% were exposed to at least one form of child maltreatment, 4% were exposed to two forms, and 0.4% had been exposed to all three forms of maltreatment. Among participants, 11% experienced severe physical abuse, 3% experienced severe sexual abuse, and 13% witnessed domestic abuse as a child. Severe child maltreatment was positively correlated with impulsivity, substance use, and binge drinking, and it was negatively correlated with emotional adjustment. Substance use and binge drinking were independently positively associated with impulsivity and negatively associated with emotional adjustment. Four mediation models were analyzed using Hayes PROCESS macro in SAS 9.4. The study found that impulsivity and emotional adjustment were independent partial mediators between severe child maltreatment and substance use and severe child maltreatment and binge drinking while controlling for sociodemographic factors.

INDEX WORDS: Child maltreatment, Child abuse, Adverse childhood experiences, ACEs, Impulsivity, Emotional adjustment, Substance use, Binge drinking, Mediation

THE ASSOCIATION BETWEEN CHILD MALTREATMENT AND IMPULSIVITY, EMOTIONAL ADJUSTMENT, AND SUBSTANCE USE AMONG FIRST YEAR MALE COLLEGE STUDENTS

By

KATHERINE ANN MORAN

B.S., HOFSTRA UNIVERSITY

A Thesis Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment
of the
Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA
30303

APPROVAL PAGE

THE ASSOCIATION BETWEEN CHILD MALTREATMENT AND IMPULSIVITY, EMOTIONAL
ADJUSTMENT, AND SUBSTANCE USE AMONG FIRST YEAR MALE COLLEGE STUDENTS

by

KATHERINE ANN MORAN

Approved:

Laura Salazar
_____
Dr. Laura Salazar
Committee Chair

Shanta R. Dube
_____
Dr. Shanta Dube
Committee Member

Date: December 7, 2020

ACKNOWLEDGMENTS

Thank you to my thesis committee, Dr. Laura Salazar and Dr. Shanta Dube, for their invaluable guidance, direction, and support during the development of this thesis. It has been a pleasure and inspiration to learn from and work with professionals so dedicated to and knowledgeable of this field of research. I would also like to thank my Committee Chair, Dr. Laura Salazar specifically for allowing me to access and use her research data and for her dedication to my project. Thank you to the Georgia State School of Public Health, and all my professors who have provided an amazing education and countless opportunities for professional and personal growth. In addition, I'd like to thank my peers in the program and my friends and family who have supported me throughout the process.

AUTHOR'S STATEMENT PAGE

In presenting this thesis as a partial fulfillment of the requirements for an advanced degree from Georgia State University, I agree that the Library of the University shall make it available for inspection and circulation in accordance with its regulations governing materials of this type. I agree that permission to quote from, to copy from, or to publish this thesis may be granted by the author or, in his/her absence, by the professor under whose direction it was written, or in his/her absence, by the Associate Dean, School of Public Health. Such quoting, copying, or publishing must be solely for scholarly purposes and will not involve potential financial gain. It is understood that any copying from or publication of this dissertation which involves potential financial gain will not be allowed without written permission of the author.

Katherine Ann Moran
Signature of Author

v

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter I – Introduction

An individual's family and home environment during childhood and young adulthood can significantly impact their physical health, psychological adjustment, and emotional wellbeing (Roustit et al. 2011). Specifically, child maltreatment, neglect, and witnessing domestic abuse at a young age have been shown to cause poor mental and physical health throughout the lifespan (Springer et al., 2007). Child maltreatment is common in the United States; 678,000 (9.2 per 1,000) children in the U.S. experienced abuse and neglect 2018 alone. The number of substantiated cases reported to the Department of Health and Human Services (2020) has been rising since 2014 (HHS, 2020). The state of Georgia has one of the highest rates of child maltreatment in the country. Those at most significant risk for experiencing child maltreatment include young children below the age of three and children who have parents who abuse drugs and alcohol. Native American, Alaskan Native, Black, and African American children have the highest child maltreatment rates in the county compared to children of other ethnicities (HHS, 2020).

Individuals who experience physical or sexual abuse or witness domestic abuse as children are at a higher risk for physical and mental illnesses during childhood, adolescence, and adulthood (Chartier et al.,2010; Fergusson et al., 2013; González et al., 2016; Mwachofi et al., 2020; Salokangas et al., 2019; Widom et al., 2012). These individuals have been shown to develop poor perceived mental and physical health, depression, anxiety, mania, substance use disorders, suicide attempts and ideation, low self-esteem, increased victimization and perpetration of intimate partner violence, and personality disorders. Individuals who

experienced maltreatment as children are also at an increased risk for type 2 diabetes,

increased BMI, pain, disability, and poor overall physical wellbeing (Chartier et al.,2010;

Fergusson et al., 2013; González et al., 2016; Mwachofi et al., 2020; Salokangas et al., 2019;

Widom et al., 2012).

The effects of child maltreatment have often been studied in conjunction with the stress

sensitization model (Harkness and Hayden, 2020). This model posits that stressful life events

sensitize individuals making them more vulnerable to intensified future stress. In other words,

someone who has been exposed to child maltreatment may have a more amplified response to

daily stressors than someone who hasn't been exposed. Studies have tested this model and

have found that child maltreatment increases the likelihood of these individuals developing

symptoms of mental and physical illness compared to controls (Harkness and Hayden, 2020).

Other studies examining the effects of child maltreatment have shown exposure may

also increase impulsivity and have negative effects on emotional adjustment among

adolescents; however, there has been little focus on whether these effects persist to young

adulthood such as college age (Brodsky et al., 2001; Brown et al., 2018; Espeleta et al., 2020;

Messman-Moore et al., 2000). Decreased emotional adjustment to college and heightened

impulsivity may be indicators of poor mental and physical health in young adulthood because

these factors often correlate with other symptoms of mental and physical illness (Brodsky et al.,

2001; Brown et al., 2018; Chamorro et al., 2012; Espeleta et al., 2020; Gerdes and Mallinckrodt,

1994;).

In this study, surveys were analyzed from a diverse group of male college freshmen in

Georgia to assess if exposure to child maltreatment is associated with heightened impulsivity

and negative emotional adjustment to college life. It was also assessed if these factors mediate the relationship between child maltreatment and substance use. These findings may support the rationale of implementing therapeutic interventions that target impulsivity and emotional adjustment to reduce the rates of substance use and other mental and physical ailments among first-year college students who have experienced adverse child events such as maltreatment.

Chapter II - Literature Review

2.1 Child Maltreatment and Maltreatment as a Public Health Problem

Child maltreatment is common in the United States. The latest report synthesized from The National Child Abuse and Neglect Data System (NCANDS) found that 678,000 (9.2 per 1,000) children in the United States had experienced child maltreatment in 2018. That same year, 1,770 children died from abuse and neglect. The total number of substantiated child maltreatment cases has risen in the U.S. since 2014, according to The Department of Health and Human Services (HHS, 2020). The U.S. states with the highest child maltreatment victimization rates include Kentucky (23.5 per 1,000 children), West Virginia (19.1 per 1,000), and Massachusetts (18.9 per 1,000 children). In the state of Georgia, there were 11,090 substantiated cases of maltreatment in 2018. While this number has decreased significantly since 2014 (22,163), Georgia still ranks among the top twenty states for high child maltreatment rates (HHS, 2020).

The Centers for Disease Control and Prevention (CDC, 2008) defines child maltreatment as an intentional or neglectful act by a parent or caregiver that results in a situation where a child is harmed or has the potential to be hurt. Harm can include physical, psychological, or

sexual abuse. Neglect involves a caregiver's failure to meet a child's basic physical, emotional, educational, and medical needs. It can also include a lack of supervision or exposure to violence in the environment (CDC, 2008). Physical child abuse involves the intentional use of force resulting in, or potentially resulting in, bodily injury. However, abuse does not have to leave a physical mark on the body to be considered abuse. Physical abuse may involve hitting, pushing, throwing, beating, punching, choking, shoving, burning, poisoning, and other physical acts of violence. Sexual abuse consists of a caregiver's sexual act on a child, even if only attempted. This type of abuse includes intentional contact with the genitalia, the anus, the groin, inner thighs, breasts, or buttocks. Psychological abuse involves a caregiver's intentional behavior to make a child feel unloved, worthless, flawed, unwanted, or in danger (CDC, 2008).

Some children are more vulnerable to experiencing maltreatment than others. Young children (under three years of age) are at the most significant risk, and babies under one year experience the highest victimization rates compared to any other age (26.7 per 1,000 children). Girls are more likely to experience child maltreatment (9.6 per 1,000) compared to boys (8.7 per 1,000) (HHS, 2020). American Indian or Alaskan Native children are more likely to experience child maltreatment (15.2 per 1,000) than children of all other ethnicities (HHS, 2020). African American or Black children are the second most likely (14 per 1,000), and multiracial children are the third most likely ethnicity (11.0 per 1,000) to experience maltreatment. Pacific Islander children's victimization rates are 9.3 per 1,000, and White and Hispanic children have similar victimization rates at 8.2 and 8.1, respectively. Asian children are the least likely to experience abuse or neglect (1.6 per 1,000) (HHS, 2020).

For most children experiencing maltreatment (91.7%), the perpetrator is their parent. Of children who experience maltreatment, 39.4% are victimized by their mother only, and 21.5% are victimized only by their father (HHS, 2020). Other perpetrators of child maltreatment may include relatives, an unmarried partner of a parent, non-related adults, non-related children, foster siblings, babysitters, clergy, household staff, and school staff. A parent or caregiver's characteristics can also increase the likelihood of abuse perpetration, where a caregiver's substance use is the most significant risk factor (HHS, 2020).

2.2 Mental and Physical Implications from an Exposure to Child Maltreatment

Experiencing child maltreatment has been shown to cause significant and lifelong physical and mental illnesses during childhood and adulthood. Mwachofi et al. (2020) analyzed the effects of adverse childhood experiences on mental health among 13,900 adults in North Carolina. The authors found that physically or sexually abused individuals were significantly more likely to experience depressive symptoms and have fewer days of good mental health. They reported a dose-response relationship for physical and sexual abuse, where higher rates of abuse led to increased depressive symptoms. Also, increased sexual abuse rates as a child were associated with an increased number of days of poor mental health during the last 30 days. This study also analyzed the effects of adults who had witnessed domestic abuse as children. Adults who saw their parents hit, slap, punch, kick or beat each other once had about 1.5 more days of poor mental health per month compared to those who had not. The authors also found a dose-response relationship where individuals who witnessed domestic abuse more than once had 3.5 more days of poor mental health in the month than those who had not seen any abuse (Mwachofi et al., 2020).

Salokangas et al. (2019) also studied the associations between childhood adversities and trauma on mental illness in adulthood. The authors examined interviews and survey data from 415 participants in Finland, which assessed the participant's emotional neglect, emotional abuse, physical abuse, physical neglect, and sexual abuse. The authors found that physical abuse was significantly statistically associated with depressive, manic, and anxiety disorders and substance dependency. They did not find significant associations between sexual abuse and mental illness, but the authors believed this was due to the low frequency of sexual abuse among the population studied (Salokangas et al., 2019).

A 30-year longitudinal study examining 900 individuals in New Zealand examined the long-term effects of childhood sexual abuse on young adults. The authors found that childhood sexual abuse was significantly associated with major depression, suicidal ideation, suicide attempts, anxiety disorder, drug and alcohol dependence, decreased self-esteem, higher rates of PTSD symptoms, and reduced life satisfaction. The authors also found that childhood sexual abuse was associated with an increased number of sexual partners, lower age of onset of sexual activity, increased visitation with doctors for physical health concerns, and lower socioeconomic wellbeing (Fergusson et al., 2013). A similar 30- year longitudinal study conducted by Herrenkohl et al. (2013) in the United States had similar findings.

González et al. (2016) analyzed the impacts of childhood maltreatment and witnessing domestic abuse as a child on young adults' psychological wellbeing. The authors conducted a cross-sectional study of 3,798 young British men and found that childhood physical abuse was independently associated with intimate partner violence (González et al., 2016). They also found that individuals who witnessed domestic violence as a child were more than three times

as likely to report serious intimate partner violence as an adult. These effects were mediated by an antisocial personality disorder, alcohol dependence, and psychosis (González et al., 2016). Another study conducted by Russell et al. (2010) analyzed 1,175 young adults and found that individuals who frequently witnessed domestic abuse were more likely to have severe depressive symptoms when compared to those who didn't. They found that seeing domestic abuse often was an independent risk factor when controlling for other types of adversities (Russell et al., 2010).

While child maltreatment can have implications for young adulthood and older adulthood, they can also have more immediate effects on children and adolescents. Karatekin and Ahluwalia (2016) assessed the impact of ACEs on mental health in undergraduate students at a public mid-western school. The authors found that increased ACEs were associated with higher levels of stress, less social support, and worse mental health outcomes than students with fewer ACEs (Karatekin and Ahluwalia, 2016). Lu et al. (2019) analyzed data from an ethnically diverse sample of 864 adolescents from seven public high schools in the southern United States. This longitudinal study assessed whether childhood physical abuse victims scored high on scales testing for anxiety, post-traumatic stress disorder (PTSD), depressive symptoms, and physical dating violence victimization and perpetration. The authors found that childhood physical abuse significantly correlated with anxiety, depressive symptoms, and PTSD. The authors found that PTSD was a mediator between childhood physical abuse and dating violence perpetration and victimization (Lu et al., 2019). As seen among adults, children with adverse childhood experiences and exposures to abuse are at an increased risk for alcohol and substance use disorders (Dube et al., 2006; Afifi et al., 2020).

Studies have also shown that child maltreatment can have implications on an individual's physical health. Widom et al. (2012) found that physical child abuse was an indicator of malnutrition and increased diabetes risk through a prospective cohort study. Childhood sexual abuse was a predictor for hepatitis C and problems with oral health (Widom et al., 2012). Rich-Edwards et al. (2010) studied 67,853 women and found that physical and sexual abuse were significantly associated with increased risk of type 2 diabetes. Women with a history of early abuse had higher BMI than those without abuse. A study conducted by Chartier et al. (2010), analyzed survey responses of 9,953 Canadian residents and found that child maltreatment was a predictor for poor self-rated health, pain, disability, and increased doctor and emergency room visitation. Overall, child maltreatment has significant implications on an individual's physical and emotional health and wellbeing during childhood and well into adulthood.

2.3 Using the Stress Sensitization Model to Understand the Effects of Child Maltreatment

The Stress Sensitization Model has been used to understand the long-term health effects of child maltreatment and trauma (Harkness and Hayden, 2020). This model suggests that stressful life events, such as ACEs, sensitize individuals making them more susceptible to amplified stress and other behavioral and emotional pathologies (Harkness and Hayden, 2020). The Stress Sensitization Model was developed by Robert M. Post's original 1992 model of stress (Post's Model). Post's Model posits that the development of an affective disorder is most likely brought about by major psychological stressors of which the body becomes sensitized and increasingly vulnerable. The model states that individuals with repeated exposure to stressors experience subsequent episodes of stress more easily, even in the absence of stressful stimuli.

The model is based on the electrophysiological and behavioral sensitization of animals in electrical kindling experiments. In kindling experiments, researchers intermittently administer electrophysical stimulation to the brain causing seizures in the limbic system which can be measured and evaluated. Over time, this continuous administering of the same amount of stimulation results in increased responsivity and increased seizures (Post and Weiss, 1998). These experiments showed that repeated electrical stimulation causing seizures could cause animals to have episodes autonomously, even in the absence of electrical stimulation. Post suggested that human stressors, like the electrical stimulation in animals, have long term effects on gene expression. He stated stressors cause changes in gene transcription affecting neurotransmitter and neuronal transmission, neuropeptides, and receptors. These changes can produce long-term synaptic adaptations and memory changes that can never be reversed (Harkness and Hayden, 2020).

Later versions of Post's Model refine this original hypothesis based on new research in epigenetics. Post's 2016 version of the model states that stressors lead to epigenetic modifications and the new model distinguishes between episode sensitization and stress sensitization. Episode sensitization involves the neurobiological changes occurring from episodes resulting in individuals developing traits making them more vulnerable to subsequent episodes. Stress sensitization triggers episodes leaving the individual more sensitive to stress. Post also believed that the type, severity, and frequency of the stressor would impact stress sensitization (Harkness and Hayden, 2020).

Stress during early life can have a major impact on an individual's physiology and neurochemistry. All people experience a stress response in relation to certain stimuli where

mediators of stress, including cortisol, adrenaline, and other glucocorticoid hormone levels, rise

in the body (Danese et al., 2015; Garner, 2013). The stress response is determined in part by

genetic predispositions but also by past experiences. Neuronal pathways, or synapses, are

strengthened the more they are activated causing individuals with prolonged or frequent stress

to have a stronger neuronal connections in relation to their stress response. While the stress

response is a normal biological function that can help to build resilience and tolerance, toxic

stress occurs with frequent or prolonged activation of the stress response. Without sufficient

external social and emotional support, toxic stress can impair a child's ability to return their

stress system back to their baseline (Garner, 2013).

Animal studies have found that increased glucocorticoid production can lead to reduced

functioning of these hormone's receptors due to epigenic changes. Individuals with ACEs have

increased glucocorticoid production as well, and reduced receptor functioning leads to a swell

of other physiological problems including decreased immune system functioning, decreased

functioning of the inflammatory response, impaired brain development, and decreased energy

regulation (Danese et al., 2015).

The stress response is activated in the amygdala within the limbic system. Individuals

who have experienced ACEs and those diagnosed with PTSD have been shown to have a highly

activated and enlarged amygdala. This region of the brain is also associated with aggression and

impulsivity, and individuals with a strengthened amygdala may have a greater predisposition to

have impulsive and aggressive behavior (Garner, 2013). In addition, chronic stress has been

shown to impact the prefrontal cortex which can suppress impulsivity and maladaptive

responses to stress (Garner, 2013). Animal studies have shown that chronic stress reduces

synaptic connective in the prefrontal cortex, leading to an inability to regulate a heightened amygdala. The hippocampal region of the brain is also affected by the stress response and this region is associated with learning and memory. Studies have found that individuals with PTSD have decreased growth and development of the hippocampus nervous tissue which may prevent social and emotional learning, language, and cognitive skills. This in turn may lead to decreased emotional adjustment (Garner, 2013).

Many early studies have utilized the Stress Sensitization Model to understand how experiences with abuse and maltreatment impact an individual's mental health later in life (Harkness et al., 2006; McLaughlin et al., 2010; Shapero et al., 2013), Harkness, et al. (2006), compared the sensitization of adolescents who had and had not experienced child maltreatment. The authors found that child maltreatment was a significant risk factor for the sensitization of independent stressors for individuals experiencing their first episode of depression (Harkness et al., 2006). McLaughlin et al. (2010) also found that individuals with stressful life events were more likely to develop major depression, PTSD, and anxiety disorders over the previous year. The authors found a dose-response relationship, as well. They reported that individuals with three or more childhood adversities had increased stress sensitization and were 12.5% times more likely to experience depression than those without childhood adversities (McLaughlin et al., 2010).

Recent studies have found similar findings to Harkness et al. (2006) and McLaughlin et al. (2010). A study conducted by Bandoli et al. (2017) tested the stress sensitization model among soldiers in the Army to determine if individuals exposed to childhood adversity were more vulnerable to mental illness from stressful experiences later in life. The authors found

that new soldiers were at an increased risk of depression and anxiety following recent stressful

experiences if they had experienced childhood adversities (Bandoli et al., 2017). Rousson et al.

(2020) also examined the stress sensitization model as a mechanism for increased adult

depression in those who experienced childhood maltreatment. The authors examined 457 low-

income adults. They found that those who had experienced child maltreatment were more

likely to experience depression due to adult stressors, compared to those without childhood

adversities (Rousson et al., 2020).

Wade et al. (2019) found that this effect of adversity during childhood as a mechanism

of increased sensitization to stressors can be seen in children. The authors conducted a

longitudinal study (2001-2018) of 136 children in Bucharest, Romania. They found that children

who experienced adversity showed increased sensitization to later life stressors when

compared to children without those adversities. Sensitization in this study was measured by

externalizing problems in adolescents where higher levels of externalizing problems were a

function of increased sensitization (Wade et al., 2019).

2.4 Impulsivity as a Result of the Exposures to Child maltreatment

High impulsivity is associated with poor behavioral and mental health outcomes, and it

may be one of the effects of exposure to child maltreatment. Impulsivity is defined as an

inclination to have swift, unplanned reactions to stimuli without regard for the potential

adverse consequences for one's self and others. Impulsivity can be considered a personality

trait or described as a psychological state or behavior (Chamorro et al., 2012). Chamorro et al.

(2012) conducted a study to determine the correlates of impulsivity such as behavior, health,

and wellbeing. The authors analyzed 34,653 in-person surveys in a representative sample of

adults across the U.S. and revealed significant mental, emotional, and behavioral health concerns associated with impulsivity. About 84% of the individuals with high impulsivity had been diagnosed with at least one psychiatric disorder during their lifetime. Individuals with high impulsivity were more than twice as likely to have an axis one psychological disorder, and nearly four times as likely to have a personality disorder. Impulsivity was largely associated with ADHD, bipolar disorder, drug dependency, as well as narcissistic, schizotypal, dependent, antisocial, and borderline personality disorders. Individuals with high impulsivity are more likely to engage in risky sexual behavior, have problems with gambling or spending a lot of money, or make sudden changes in important aspects of their life. High impulsivity is correlated risky behaviors to the individual and others including reckless driving, fighting, shoplifting, perpetrating domestic violence, and trying to hurt or kill themselves (Chamorro et al., 2012).

Brodsky et al. (2001) examined impulsivity, aggression, and suicide attempts among 136 depressed adults. The authors found that individuals who experienced abuse as children were more likely to be aggressive and impulsive. Additionally, impulsivity was significantly associated with suicide attempts and was found to act as a mediating factor between child maltreatment and suicide attempts (Brodsky et al., 2001). Roy (2005) studied the association between childhood trauma and impulsivity. The author found that physical abuse had a minor but significant relationship with impulsivity among 268 drug-dependent patients in recovery (Roy, 2005). In addition, Brown et al. (2018) found an association between child maltreatment, impulsivity, and body mass index (BMI) among 500 undergraduate students. The authors found that impulsivity moderated the association between childhood *sexual* abuse and adult BMI such

that those with higher impulsivity were more likely to have increased BMI if childhood sexual abuse had occurred (Brown et al., 2018).

2.5 The Impacts of Exposures to Child maltreatment on Emotional Adjustment to College

Exposures to child maltreatment may additionally impact a student's emotional adjustment to college, which may in turn affect their health and wellbeing later in life. The American Psychological Association (2020) defines emotional adjustment as an individual's process or ability to accept and adapt to their life's circumstances. Emotional adjustment involves adjusting attitudes and expressing emotions appropriately for the situation. An early study conducted by Gerdes and Mallinckrodt (1994) found that emotional adjustment to college was a predictor for student retention, whereas poor emotional adjustment led students to drop out of school at higher rates. Students with lower emotional adjustment were shown to have increased difficulty with their coursework and higher anxiety, stress, and depression levels. (Gerdes and Mallinckrodt, 1994). LaBrie et al. (2012) found that individuals with low rates of adjustment to college had higher drinking rates as a coping mechanism. As expected, the authors found that those with better college adjustment were less likely to drink alcohol to cope.

Although limited studies have analyzed the effects of child maltreatment on emotional adjustment to college life, Messman-Moore et al. (2000) examined these variables among 648 college women (ages 17-49) who had experienced sexual abuse as a child. The study found that the women who had experienced sexual abuse had greater difficulties with emotional adjustment and experienced more significant amounts of distress when compared to students who hadn't experienced sexual abuse (Messman-Moore et al., 2000). In addition, Espeleta et al.

(2020) analyzed the impacts of ACEs on college adjustment in 1,191 (majority Caucasian female) students from a large midwestern university. The authors assessed emotional adjustment in the students by analyzing various depressive and anxious symptoms. They found that ACEs were associated with negative emotional adjustment outcomes, which were mediated by emotion dysregulation.

Numerous studies have analyzed the predictors of emotional adjustment, and many predictors relate to early childhood. McKinney et al. (2011) analyzed parenting styles and their effects on emotional adjustment among older adolescents (18-22 years). The authors found that authoritarian parenting and harsh discipline are associated with insufficient emotional adjustment. Darlow et al. (2017) found that children of parents who are overinvolved and over-controlling in their child's life had poorer rates of adjustment to college. Katz and Somers (2017) found that various factors influence college adjustment, including maladaptive coping mechanisms, gender, shyness, social support, parental support, and perceptions of the university's environment. Leong et al. (2007) found that emotional adjustment to college for first-year students was predicted by the type of coping mechanism they often used. Individuals who displayed active coping mechanisms (finding and planning solutions to a problem and following through) had better rates of emotional adjustment to college when compared to individuals whose coping mechanisms relied on only venting their emotions (Leong et al., 2007).

2.6 Impulsivity, Emotional Adjustment, and Substance Use among College Students

Although there has been significant research studying the effects of exposure to child maltreatment on mental illness and depression, there has been little focus on the specific impacts of abuse on impulsivity and emotional adjustment to college life for young students.

Some studies, however, have been conducted and suggest that child maltreatment may lead to impulsivity and low emotional adjustment among college freshmen (Brodsky et al., 2001; Brown et al., 2018; Espeleta et al., 2020; Messman-Moore et al., 2000; Roy, 2005). Impulsivity and low emotional adjustment are associated with poor behavioral and mental health outcomes (Chamorro et al., 2013; Kenney et al., 2019; Lai et al., 2015). If decreased emotional adjustment and low emotional control are associated with child maltreatment, they may be indicators of mental and physical illness in young adulthood and later life.

It has been well established in the literature that child maltreatment is associated with alcohol and substance use among adolescents and young adults (Afifi et al., 2020; Dube et al., 2006; Fergusson et al., 2013; Gonzales et al., 2016; Herrenkohl et al., 2013; Salokangas et al., 2019). However, studies are limited in assessing if impulsivity and emotional adjustment act as mediators for alcohol and substance use.

2.7 Contribution to the Literature

Many studies conducted in the U.S. over the past five years, which have analyzed the emotional and behavioral health of first-year college students, have been limited to one to four universities. Additionally, many of these studies included students from private universities or universities with primarily Caucasian middle-class student populations. Other studies found in this category do not indicate demographics or race in the methodology or findings (Brandy et al., 2015; Karatekin and Ahluwalia, 2016; Kenney et al., 2019; Reid et al., 2016; Slavish et al., 2018; Wyatt et al., 2017). These limitations restrict the generalizability of past findings, especially for lower socioeconomic status and minorities. Wyatt et al. (2017) found that racial and ethnic minority students and individuals with high perceived discrimination are at a higher

risk for poor mental health. A recent national survey found that Black students were significantly more likely to attempt suicide when than their White counterparts (Wyatt et al., 2017). This suggests that conducting a study on a group of first-year male college students with diverse races, ethnicities, and socioeconomic statuses will contribute to the generalizability of findings regarding the behavioral health impacts of child maltreatment among older adolescents.

First-year college students may be at an increased vulnerability to poor emotional and behavioral health due to the challenging and stressful circumstances associated with starting college (Brandy et al., 2015). However, first-year students have been shown to have a lower prevalence of mental illness when compared to their upperclassmen. Because of this, they may be a prime target for college behavioral health promotion interventions (Wyatt et al., 2017). If a diverse population of male college freshmen are found to have increased impulsivity and decreased emotional adjustment due to child maltreatment, then interventions to reduce these behavioral mal adaptations can focus efforts on first-year students with child maltreatment exposure. Similarly, if impulsivity and emotional adjustment mediate the relationship between child maltreatment and alcohol and substance use, it would highlight the importance of substance use reduction campaigns to focus on these specific determinants among college students with a history of child maltreatment.

Chapter III – Methods and Procedures

3.1 Participants and Procedure

This study analyzed secondary baseline data from four waves of online surveys completed by 1,129 first-year male college students from one of thirty universities and colleges across the state of Georgia. The original study was a multi-phase longitudinal cohort study using self-reported data. All processes and procedures were approved by the Institutional Review Board (IRB) associated with the principal investigator's institution and for the participating schools who required it. Institutions were only included in the study if they were a four-year Bachelor's degree granting institutions with accreditation. Participants eligible to take part in the study included first-year male college students currently enrolled in a participating school who were between the ages of 18 and 24 (Bellis et al., 2020).

The four waves of online surveys were obtained over the course of 18 months and encompassed a rolling recruitment procedure of three cohorts of students. The first cohort was recruited in the Fall of 2013, the second cohort was recruited in the Spring of 2014 and the third cohort was recruited in the Fall of 2014. The surveys took place upon completion of enrollment in the study, after 6 months, after 12 months, and again after 18 months. Students were compensated for each survey they took. The surveys took 15 to 30 minutes to complete and the overall retention rate for the completion of all four surveys was 76% (Bellis et al., 2020).

Participants were recruited to take the online surveys through several campaigns including Facebook advertisements, peer referrals, on campus events, and announcements in the classroom. Students interested in taking part in the study completed a brief online

screening through the study's website. Individuals who met the inclusion criteria were asked to complete a consent form prior to enrollment (Bellis et al., 2020).

3.2 Measures

Sociodemographic Characteristics

Sociodemographic information was retrieved from participants during each wave of the study. It included participants' age, race and/or ethnicity, parental income, location of current residence (on or off campus), sexual orientation, high school GPA, and international student status. Sociodemographic information was used in multivariate modelling to determine what variables served as covariates. Parental income, race, sexual orientation, age, and housing status were controlled for in this study.

Exposures to Child maltreatment

Exposures to child maltreatment was assessed using The Second Injury Control and Risk Survey (ICARIS-2), which evaluates exposure to unintentional injuries (HHS, 2011). Three questions from the ICARIS-2 were utilized in this study to determine participants' exposure to child maltreatment including: Question one assessed early childhood physical abuse with a dichotomous scoring system of yes or no, ("looking back on your childhood, did you have injuries, such as a bruises, cuts, or broken bones, as a result of being spanked, struck, or shoved by your parents or guardians, or their partners?"). Question two assessed witnessing domestic abuse as a child using a dichotomous scoring system, yes or no, ("as a child, did you ever see or hear one of your parents or guardians being hit, slapped, punched, shoved, kicked, or otherwise physically hurt by their spouse or partner?"). Question three assessed childhood sexual abuse with response options of 'Yes', 'No', 'I don't know', or 'neutral,' ("were you ever forced to have

sex before age 14?"). For each question "yes"= 1 and "no"=0. Each participant's responses were summed for a total score of 0-3, where "0"=no forms of maltreatment were experienced during childhood and "3"=3 forms of maltreatment were experienced during childhood. The "I don't know" and "neutral" responses were omitted.

Impulsivity

Impulsivity was measured using the 12 questions of the Urgency subscale within the UPPS Impulsive Behavior Scale (Whiteside & Lynam, 2001). Each question used a Likert-scale response format ranging from "1"= strongly disagree to "7"=strongly agree. Higher scoring of the impulsivity scale represented higher levels of impulsivity. The impulsivity scale addressed the participants perceptions of their feelings and behavior. For each participant, all 12 impulsivity scores were summed for an overall score. Cronbach's alpha was calculated to measure internal consistency among the 12 questions. The Cronbach coefficient alpha value for impulsivity was 0.89 and is high enough to suggest that there is internal consistency among the questions.

Emotional Adjustment

Emotional adjustment was assessed using the 15 questions of the Personal-Emotion Adjustment subscale developed by Baker and Siryk (1984). Each question used a Likert-scale response format ranging from "1"=applies closely to me to "7"=does not apply to me. Higher scoring on the emotional adjustment scale represents a poorer experience with adjusting emotionally to college. The scale assesses the participants' recent feelings and emotions. For each participant, all 15 emotional adjustment scores were summed for an overall score. Cronbach's alpha was calculated to measure internal consistency among the 15 questions. The

Cronbach coefficient alpha for emotional adjustment was 0.86. This high coefficient suggests that there is internal consistency among the questions and therefore it is appropriate to sum the scores.

Substance Use

Substance use was measured using 13 questions of the National Institute on Drug Abuse (NIDA, 2009) Modified Alcohol, Smoking, and Substance Involvement Screening Test (NMASSIST). Scoring of the alcohol and drug use scale represents the frequency or number of times a specific substance was used by an individual 30 days prior to starting college (NIDA, 2009). Each of the 13 questions used a Likert-scale response format ranging from "1"=never used to "8"=used all 30 days. These questions assessed the use of alcohol, tobacco, marijuana, cocaine, amphetamine stimulants, inhalants, rohypnol, sedatives or sleeping pills, hallucinogens, opioids, and other drugs. The remaining questions assessed frequencies of drinking and driving, frequencies and quantities of alcohol use before starting college, and perceived social norms of alcohol use, tobacco, use, marijuana use, other drug use, and partying. For each participant, all 13 substance use scores were summed for an overall score. Cronbach's alpha was calculated to measure internal consistency among the 13 questions. The Cronbach coefficient alpha for substance use was 0.84 suggesting there is internal consistency among the questions.

Binge Drinking

Binge drinking was measured using one question of the National Institute on Drug Abuse (NIDA, 2009) Modified Alcohol, Smoking, and Substance Involvement Screening Test (NMASSIST). Scoring of the binge drinking question describes the number of times over the last

30 days prior to starting college, participants had five or more alcoholic drinks in one sitting (NIDA, 2009). The question used a Likert-scale response format ranging from "0"=none "9"=9 or more times.

3.3 Statistical Analyses

Statistical analysis was performed using SAS software (SAS 9.4) and univariate analysis was conducted to measure descriptive characteristics of the population. The mean and standard deviation was calculated for participants' age and high school GPA. Frequency distributions and proportions were conducted for all other sociodemographic variables including race and/or ethnicity, parental income, location of current residence, sexual orientation, and international student status, because these variables were measured and coded categorically. Frequency distributions and proportions were also obtained for the independent forms of child maltreatment. Means, standard deviations, and ranges were acquired for substance use scores, binge drinking scores, impulsivity scores, emotional adjustment scores, and total child maltreatment scores.

Bivariate analyses were conducted to assess the relationships between the predictor and the four outcomes. Pearson Correlation analyses were conducted to determine the relationships between maltreatment scores and impulsivity, maltreatment scores and emotional adjustment, maltreatment scores and substance use, and maltreatment scores and binge drinking. Multivariate analyses involved four models (shown in Figure 3.1) and stepwise model selection was used to determine what covariates would be controlled for in additional modeling. Of the demographic variables assessed, those variables that had a p-value of 0.15 or less in stepwise selection were controlled for. The stepwise model selection analyses found the

significant covariates to be age, select races/ethnicities, housing status, parent's estimated income, and sexual orientation. The other sociodemographic characteristics were not significant and thus not included in the models.

To investigate if impulsivity scores and emotional adjustment scores mediate the relationship between exposure to child maltreatment and increased substance use, a multivariate mediation analysis was conducted. Four mediation models were analyzed using Hayes PROCESS macro within SAS software (SAS 9.4). This macro includes bootstrapping which allowed the analysis to run 10,000 times, developing numerous samples with replacement. This allowed for the samples to become normally distributed and generated effect estimates and confidence intervals based on those distributions. This software was used to explore the direct and indirect effects of child maltreatment scores on substance use and binge drinking as moderated by impulsivity scores and/or emotional adjustment scores. Each model was adjusted for age, select races/ethnicities, housing status, parent's estimated income, and sexual orientation. The indirect and total direct effects were used to calculate what proportion the indirect effect (mediation effect) had compared to the total effect.
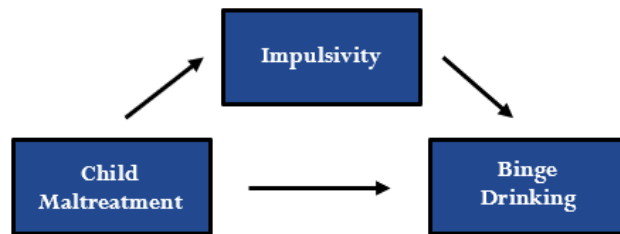
Figure 3.1

*Four Mediation Models Assessed in This Study*

Model 1: $Y_{(SU)} = \beta_o + \beta_{1(IMP)} + \beta_{2(CM)} + \beta_{3(AGE)} + \beta_{4(RAC)} + \beta_{5(HOU)} + \beta_{6(INC)} + \beta_{7(SO)} + \beta_{8(IMP*AGE)} + \beta_{9(IMP*RAC)} + \beta_{10(IMP*HOU)} + \beta_{11(IMP*INC)} + \beta_{12(IMP*SO)} + \beta_{13(SU*AGE)} + \beta_{14(SU*RAC)} + \beta_{15(SU*HOU)} + \beta_{16(SU*INC)} + \beta_{17(SU*SO)} + E$
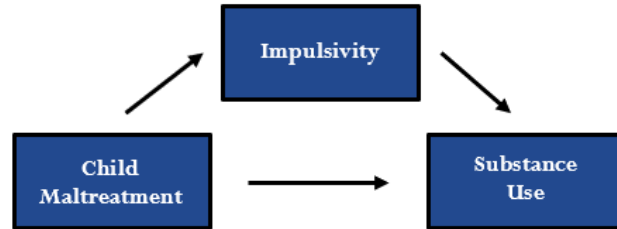
Model 2: $Y_{(BD)} = \beta_o + \beta_{1(IMP)} + \beta_{2(CM)} + \beta_{3(AGE)} + \beta_{4(RAC)} + \beta_{5(HOU)} + \beta_{6(INC)} + \beta_{7(SO)} + \beta_{8(IMP*AGE)} + \beta_{9(IMP*RAC)} + \beta_{10(IMP*HOU)} + \beta_{11(IMP*INC)} + \beta_{12(IMP*SO)} + \beta_{13(BD*AGE)} + \beta_{14(BD*RAC)} + \beta_{15(BD*HOU)} + \beta_{16(BD*INC)} + \beta_{17(BD*SO)} + E$

Model 3: $_{(SU)} = \beta_o + \beta_{1(EMA)} + \beta_{2(CM)} + \beta_{3(AGE)} + \beta_{4(RAC)} + \beta_{5(HOU)} + \beta_{6(INC)} + \beta_{7(SO)} + \beta_{8(EMA*AGE)} + \beta_{9(EMA*RAC)} + \beta_{10(EMA*HOU)} + \beta_{11(EMA*INC)} + \beta_{12(EMA*SO)} + \beta_{13(SU*AGE)} + \beta_{14(SU*RAC)} + \beta_{15(SU*HOU)} + \beta_{16(SU*INC)} + \beta_{17(SU*SO)} + E$
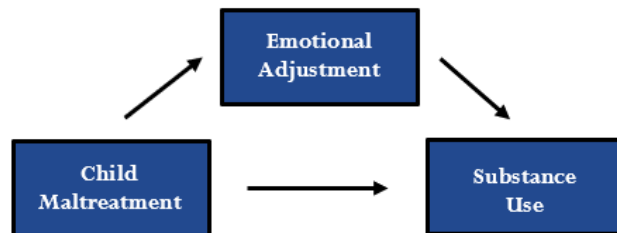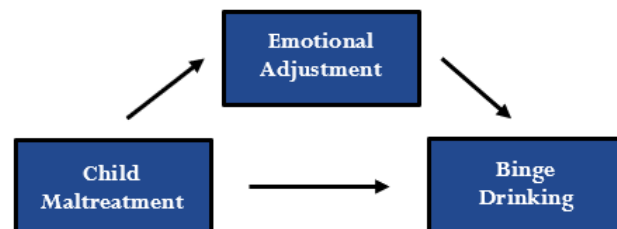

Model 4: $Y_{(BD)} = \beta_o + \beta_{1(EMA)} + \beta_{2(CM)} + \beta_{3(AGE)} + \beta_{4(RAC)} + \beta_{5(HOU)} + \beta_{6(INC)} + \beta_{7(SO)} + \beta_{8(EMA*AGE)} + \beta_{9(EMA*RAC)} + \beta_{10(EMA*HOU)} + \beta_{11(EMA*INC)} + \beta_{12(EMA*SO)} + \beta_{13(BD*AGE)} + \beta_{14(BD*RAC)} + \beta_{15(BD*HOU)} + \beta_{16(BD*INC)} + \beta_{17(BD*SO)} + E$

Key:
SU: Substance Use
BD: Binge Drinking
IMP: Impulsivity
EMA: Emotional Adjustment
CM: Child Maltreatment
RAC: Race/Ethnicity
HOU: Housing Status
INC: Parent's Estimated Income
SO: Sexual Orientation

24

Chapter IV – Results

4.1 Descriptive Statistics

The study included 1,129 male freshmen from 30 colleges across the state of Georgia. Descriptive statistics of the study population are shown in Table 4.1. The mean age of the population was 18.33, and ages ranged from 18 to 24 years. The mean GPA was 3.48, ranging from 1.25 to 4.1. The study population was primarily Caucasian (51.2%) followed by African American (18.9%) and Asian or Pacific Islander (10.8%). The percentage of Bi-racial/Multicultural Americans (10.2%) was followed by Hispanic (4.8%) and Asian Americans (3.1%). Middle Eastern and American Indian/Alaska Native Americans represented the smallest percentage of the population at 0.7% and 0.3% respectively. Over 96% of the population was made up of non-international students while nearly 4% were international. Most (75.9%) lived in on-campus dorms. This was followed by individuals living off campus (17.8%), and individuals living in a house on-campus (5.5%). Only 0.4% lived on-campus in Greek Housing, and less than 0.5% lived in other living environments.

Most of the population (61.5%) estimated their parent's annual income to be over $50,000, where 38.49% of the population made less than $50,000 annually. Nearly 27% of the population had parents earning over $100,000 per year, and nearly 18% of the population had parent's making under $25,000 per year. There was some diversity in sexual orientation among the population. Most (93.4%) of the population was heterosexual, 3.7% was homosexual, and almost 3% was bisexual.

Table 4.1

Descriptive Statistics of the Study Population

	N	Mean	SD	Min	Max	Range
Total Observations	**1129**					
Age (Years)	**1118**	18.33	0.74	18	24	6
High School GPA (Cumulative)	**1115**	3.48	0.48	1.25	4.1	2.85
	N	**n**	**%**			
Race/Ethnicity	**1118**					
Caucasian		572	51.16			
African American		211	18.87			
Asian or Pacific Islander		121	10.82			
Biracial/Multicultural		114	10.20			
Hispanic		54	4.83			
Asian American		35	3.13			
Middle Eastern		8	0.72			
American Indian or Alaskan Native		3	0.27			
International Student Status	**1118**					
Yes		42	3.76			
No		1076	96.24			
Housing Status	**1119**					
On Campus (Dorm)		849	75.87			
Off-Campus		199	17.78			
On Campus (Apartment of House)		62	5.54			
On Campus (Greek Housing)		4	0.36			
Other		5	0.45			
Parents Approximate Income	**1117**					
Under $15,000		84	7.52			
%15,000 to $24,999		115	10.3			
$25,000 to $34,999		95	8.5			
$35,000 to $49,999		136	12.18			
$50,000 to $74,999		235	21.04			
$75,000 to $99,999		153	13.7			
Over 100,000		299	26.77			
Sexual Orientation	**1119**					
Heterosexual		1045	93.39			
Homosexual		41	3.66			
Bisexual		33	2.95			

Descriptive statistics regarding the study variables are shown in tables 4.2 and 4.3. Table two specifically shows findings regarding the participants exposures to child maltreatment. Among the participants, 11.1% experienced physical abuse as a child, 12.7% witnessed domestic abuse as a child, and 2.5% experienced sexual abuse as a child. Most of the population (80.4%) did not have any of these exposures to child maltreatment. However, nearly 15% of them did experience one form of maltreatment, 4.2% experienced two forms, and 0.4% had exposure to all three forms of maltreatment.

Table 4.3 shows the descriptive statistics for the predictor and outcome variables once they were summed for total scores. The Cronbach coefficient alpha for substance use was 0.84. For impulsivity it was 0.89 and for emotional adjustment was 0.86. These high coefficients suggest that there is internal consistency among the questions of each category, and therefore it is appropriate to sum the scores. The mean score for substance use came to 16.8 and ranged from 1 to 96. The mean score for Binge Drinking was 1.29 and ranged from 0 to 9. Impulsivity averaged a score of 35.38 and its scores ranged from 12 to 84.Emotional adjustment had an average score of 65.79 and scores ranged from 6 to 105. Among child maltreatment scores, which ranged from 0 to 3, the mean score was 0.25.

Table 4.2

Descriptive Statistics of the Study Variables (Predictor Variables)

	N	n	%
Experienced Physical Abuse as a Child	1111		
Yes		123	11.07
No		988	88.93
Experienced Sexual Abuse as a Child	1111		
Yes		28	2.52
No		1064	95.77
I Don't Know		19	1.71
Witnessed Domestic Abuse as a Child	1111		
Yes		141	12.69
No		970	87.31
Abuse Exposure (Abuse Score)	1129		
Exposure to Zero Forms of Abuse		908	80.43
Exposure to One Form of Abuse		169	14.97
Exposure to Two Forms of Abuse		47	4.16
Exposure to Three Forms of Abuse		5	0.44

Table 4.3

Descriptive Statistics of the Study Variables (Predictor and Outcome Variables)

	N	Mean	SD	Min	Max	Range	Cronbach Alpha	Skewness	Kurtosis
Substance Use	1110	16.83	7.96	1	96	95	0.841	3.11	15.49
Binge Drinking	1106	1.29	2.39	0	9	9	-	1.99	2.99
Impulsivity	1114	35.38	13.39	12	84	72	0.894	0.26	-0.44
Emotional Adjustment	1114	65.79	16.31	6	105	99	0.855	-0.41	0.65
Childhood Abuse	1129	0.25	0.54	0	3	3	-	-	-

4.2 Bivariate Analyses

The Pearson correlation analysis findings are shown in table 4.4. Child maltreatment was positively correlated with impulsivity (r=0.10, p=0.0008) substance use (r=0.11, p=0.0003), and binge drinking (r=0.063, p <0.0001). However, the correlation coefficients are small. Child maltreatment was negatively correlated with emotional adjustment (r=-0.11, p=0.0015), although the correlation coefficient is small. Impulsivity was positively correlated with substance use (r=0.144, p<0.0001) and binge drinking (r=0.111, p=0.0002). Emotional adjustment was negatively associated with substance use (r=-0.157, p<0.0001) and binge drinking (r=-0.133, p<0.0001). Although these correlations exist, the correlation coefficients are small for all pairs.

Table 4.4

Pearson Correlation Analysis

	Pearson's r	P-Value
Childhood Abuse and Impulsivity	0.10	0.0008
Childhood Abuse and Emotional Adjustment	-0.096	0.0015
Childhood Abuse and Substance Use	0.11	0.0003
Childhood Abuse and Binge Drinking	0.063	0.037
Impulsivity and Substance Use	0.144	< 0.0001
Impulsivity and Binge Drinking	0.111	0.0002
Emotional Adjustment and Substance Use	-0.157	< 0.0001
Emotional Adjustment and Binge Drinking	-0.133	< 0.0001

4.3 Mediation Modelling

The mediation modeling findings for the relationships among each variable for the four models is shown in table 4.5 and figure 4.1. Overall, all the relationship coefficients were significant except for c' for child maltreatment to binge drinking for models 2 and 4. For model 1, all relationships were significant. Child maltreatment was significantly associated with impulsivity (a_1=2.55, p=0.007, CI: 1.06, 4.08), impulsivity was significantly associated with substance use (b_1=0.082, p<0.001, CI: 0.04, 0.12), and child maltreatment was significantly associated with substance use (c'=1.43, p=0.001, CI: 0.42, 2.49). In model 2, child maltreatment was significantly associated with impulsivity (a_1=2.52, p<0.001, CI: 1.01, 4.05), and impulsivity was significantly associated with binge drinking (b_1=0.02, p<0.001, CI: 0.01, 0.03). However, child maltreatment was not significantly associated with binge drinking (c'=0.23, p=0.083, CI: -0.05, 0.51). In model 3, all relationships were significant. Child maltreatment was significantly associated with emotional adjustment (a_1=-2.9 p<0.001, CI: -4.61,-1.24), emotional adjustment was significantly associated with substance use (b_1=-0.07, p<0.0001, CI: -0.1,-0.04), and child maltreatment was significantly associated with substance use (c'=1.43, p=0.001, CI: 0.42, 2.5). In model 4, child maltreatment was significantly associated with emotional adjustment (a_1=-2.89, p=0.002, CI: -4.65,-1.25), and emotional adjustment was significantly associated with binge drinking (b_1=-0.02, p<0.001, CI: -0.03, -0.01). However, child maltreatment was not significantly associated with binge drinking (c'=0.22, p=0.09, CI: -0.04, 0.5).

The overall indirect/mediation effects of impulsivity and emotional adjustment are shown in table 4.6. The indirect effect of child maltreatment on substance use through impulsivity as a mediator in model 1 was found to be significant (effect=0.21, CI: 0.07, 0.38).

There was also a significant indirect effect of child maltreatment on binge drinking through impulsivity as a mediator in model 2 (effect: 0.05, CI: 0.14,0.95). In model 3, the indirect effect of child maltreatment on substance use through emotional adjustment as a mediator was significant (effect:0.21, CI: 0.08,0.37). In model 4, the indirect effect of child maltreatment on binge drinking through emotional adjustment as a mediator was significant as well (effect:0.06, CI: 0.02, 0.1).

Table 4.5

Mediation Analysis by Each Variable Relationship for Four Models

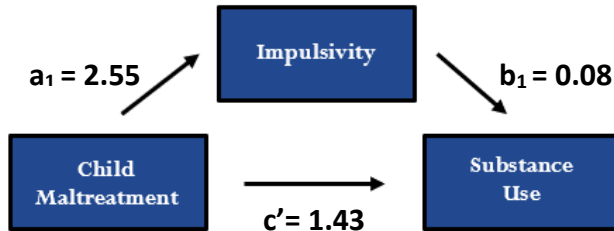| Variable Relationships	N	β	se	P	95% Boot Upper Confidence Limit	95% Boot Lower Confidence Limit
Model 1	1107					
Childhood Abuse → Impulsivity (a_1)		2.55	0.773	0.0007	1.063	4.075
Impulsivity → Substance Use (b_1)		0.082	0.019	0.000	0.044	0.119
Childhood Abuse → Substance Use (c', direct)		1.431	0.534	0.0013	0.421	2.49
Childhood Abuse → Substance Use (c, total)		1.639	0.446	0.0003	0.763	2.515
Model 2	1104					
Childhood Abuse → Impulsivity (a_1)		2.517	0.778	0.0008	1.008	4.05
Impulsivity → Binge Drinking (b_1)		0.019	0.005	0.0005	0.009	0.03
Childhood Abuse → Binge Drinking (c', direct)		0.231	0.143	0.083	-0.045	0.511
Childhood Abuse → Binge Drinking (c, total)		0.279	0.133	0.037	0.017	0.54
Model 3	1107					
Childhood Abuse → Emotional Adjustment (a_1)		-2.904	0.866	0.0014	-4.608	-1.241
Emotional Adjustment → Substance Use (b_1)		-0.071	0.014	0.000	-0.099	-0.044
Childhood Abuse → Substance Use (c', direct)		1.433	0.536	0.0013	0.419	2.497
Childhood Abuse → Substance Use (c, total)		1.639	0.446	0.0003	0.763	2.515
Model 4	1104					
Childhood Abuse → Emotional Adjustment (a_1)		-2.887	0.87	0.0015	-4.646	-1.247
Emotional Adjustment → Binge Drinking (b_1)		-0.019	0.004	0.000	-0.027	-0.011
Childhood Abuse → Binge Drinking (c', direct)		0.224	0.14	0.0924	-0.044	0.496
Childhood Abuse → Binge Drinking (c, total)		0.279	0.133	0.037	0.017	0.54

Table 4.6

Overall Indirect Effects of Mediators for Four Models

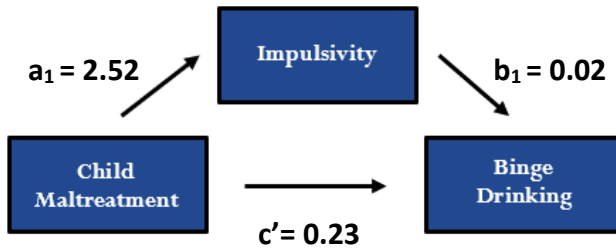| Variable Relationships	N	Effect	Boot SE	95% Boot Upper Confidence Limit	95% Boot Lower Confidence Limit
Model 1	**1107**				
Indirect effect of Childhood Abuse on Substance use through impulsivity as a mediator		0.208	0.08	0.074	0.381
Model 2	**1104**				
Indirect effect of Childhood Abuse on Binge Drinking through impulsivity as a mediator		0.047	0.021	0.014	0.095
Model 3	**1107**				
Indirect effect of Childhood Abuse on Substance use through Emotional Adjustment as a mediator		0.206	0.074	0.081	0.368
Model 4	**1104**				
Indirect effect of Childhood Abuse on Binge Drinking through Emotional Adjustment as a mediator		0.055	0.021	0.02	0.099

Figure 4.1

Four Mediation Models with Beta Coefficients

Model 1:

$a_1 = 2.55$ Impulsivity $b_1 = 0.08$

Child Maltreatment   Substance Use

$c' = 1.43$

Model 2:

$a_1 = 2.52$ Impulsivity $b_1 = 0.02$

Child Maltreatment   Binge Drinking

$c' = 0.23$

Model 3:

$a_1 = -2.90$ Emotional Adjustment $b_1 = -0.07$

Child Maltreatment   Substance Use

$c' = 1.43$

Model 4:

$a_1 = -2.89$ Emotional Adjustment $b_1 = -0.02$

Child Maltreatment   Binge Drinking

$c' = 0.22$
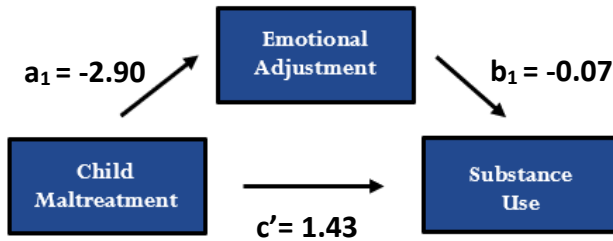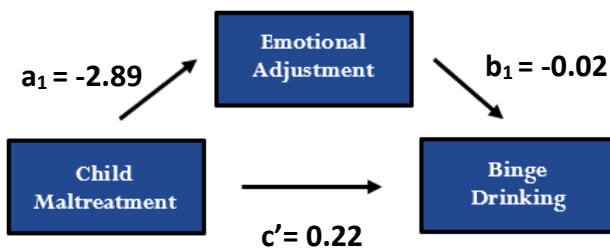
The proportion of the indirect effect of each model is shown in table 4.7. In model 1, impulsivity accounts for 12.7% of the effect that child maltreatment has on substance use, while 87.3% of the relationship between child maltreatment on substance use operates directly. For model 2, nearly 17% of the effect that child maltreatment has on binge drinking accounts for impulsivity, whereas 83% of the relationship between child maltreatment and binge drinking operates directly. In model 3, emotional adjustment accounts for 12.6% of the effect that child maltreatment has on substance use, and the direct effect accounts for 87.4% of the relationship. In Model 4, emotional adjustment accounts for nearly 20% of the effect that child maltreatment has on binge drinking, while nearly 80% of the relationship between child maltreatment and binge drinking operates directly. All the models were shown to have a significant indirect effect via the confidence limits. In addition to the significant effects shown by the confidence limits, the Sobel Test revealed statistically significant p-values for all models, strengthening the findings and suggesting indirect effects are significant.

Table 4.7

Total Effects, Indirect Effects and Proportions of Mediators on Four Models

Model	Total Effect	Indirect Effect	95% Boot Upper Confidence Limit*	95% Boot Lower Confidence Limit*	Sobel Test	Proportion of Mediation (Indirect) Effect
Model 1	1.6391	0.2083	0.0737	0.3812	p= 0.007	12.71%
Model 2	0.2785	0.0472	0.0143	0.0954	P= 0.018	16.95%
Model 3	1.6391	0.206	0.0806	0.3682	P= 0.009	12.57%
Model 4	0.2785	0.0545	0.0203	0.0992	P= 0.012	19.57%

*Confidence limits represent indirect effect

Chapter V – Discussion

5.1 Discussion of Research Questions

This study analyzed the association between child maltreatment (physical and sexual abuse and witnessing domestic abuse) on impulsivity, emotional adjustment, substance use, and binge drinking. This study also examined if impulsivity and emotional adjustment mediated the relationship between child maltreatment and substance use and child maltreatment and binge drinking. This study hypothesized that individuals with higher exposures to maltreatment would have increased scores of impulsivity, lower scores of emotional adjustment, higher scores of substance use, and higher scores of binge drinking. In addition, this study hypothesized that impulsivity and/or emotional adjustment would act as mediating factor and increase rates of substance use and binge drinking among individuals with greater exposures to maltreatment.

All Pearson correlation coefficients for each relationship were significant, suggesting that all associations hypothesized were confirmed. However, the correlation coefficients were relatively small suggesting a small correlation between them. Child maltreatment was positively associated with impulsivity, substance use, and binge drinking, and was negatively correlated with emotional adjustment as expected. Impulsivity was positively correlated with substance use and binge drinking and emotional adjustment was negatively correlated with substance use and binge drinking as expected.

The mediation analysis confirmed these relationships. These findings agree with literature that suggests that increased exposures to child maltreatment are associated with increased impulsivity (Brodsky et al., 2001; Brown et al., 2018; Roy, 2005), poorer emotional

adjustment (Darlow et al., 2017; Espeleta et al., 2020; Katz and Somers, 2017; Leong et al., 2007; McKinney et al., 2011; Messman-Moore et al., 2000), and increased substance use and drinking (Afifi et al., 2020; Dube et al., 2006; Fergusson et al., 2013; Gonzales et al., 2016; Herrenkohl et al., 2013; Salokangas et al., 2019).

Mediation modelling showed that impulsivity and emotional adjustment had significant mediating effects on the relationship between child maltreatment and substance use and child maltreatment and binge drinking. Partial mediation was found in all four models; the direct path (c') was smaller than the total path (c) in all four models but was not reduced to zero which signifies a partial mediation. Calculating the proportion of indirect effect over the total effect found that impulsivity accounts for 12.7% and 17% of the effect that child maltreatment has on substance use and binge drinking, respectively. Emotional adjustment accounts for 12.6% and 19.6% of the effect that child maltreatment has on substance use and binge drinking, respectively. This confirms the hypothesis that impulsivity and emotional adjustment act as mediators in these relationships.

The finding that impulsivity mediates the relationship between child maltreatment and substance use and binge drinking is similar to a study conducted by Baily and McCloskey (2005). The authors found that impulsivity, among other behaviors, was a mediator between child maltreatment (witnessing abuse, physical and sexual abuse), and substance use (Baily and McCloskey, 2005). Kim et al. (2018) also found that impulsivity partially mediated the relationship between childhood trauma and alcohol dependence. Wardell et al. (2016), also studied the mediating effects of impulsivity among individuals exposed to childhood maltreatment. The authors found that among various facets of impulsivity, negative urgency

was a unique mediator between child abuse and substance use (Wardell et al., 2016). Similarly, a study conducted by Oshri et al (2017) found that negative and positive urgency, and sensation seeking mediated the relationship between child maltreatment and cannabis and alcohol use.

The mediation findings of impulsivity contrast with a study conducted by Barnovala et. al (2007). The authors found that impulsivity was not a mediator between childhood trauma and substance use among 96 African American Adolescents. This may be in contrast with the current study because the authors of the study used a measure of impulsivity that did not gauge the construct of impulsivity broadly (Barnovala et. al, 2007). In addition, Barahmand et al. (2016) found that impulsivity was not a mediator between childhood emotional trauma and substance use, but that emotion dysregulation was a mediator. This study's mediation findings of emotional regulation are also supported by Mandavia et al. (2016) who found that emotion dysregulation was a partial mediator between child maltreatment and substance use among 2,014 adults. Overall, this study's hypotheses were confirmed, and the findings were expected and supported by the literature.

5.2 Study Strengths and Limitations

This study analyzed a large data set from colleges and universities across the state of Georgia and included a diverse population of individuals with various ethnicities and socioeconomic statuses. However, there are several limitations that must be considered. A primary limitation of this study is the sampling methodology. This study utilized convenience sampling and recruited participants via social media, referrals, and events. Because of this, the individuals recruited are not a random sample, and therefore may not be representative of college students in Georgia. Another limitation of the generalizability of this study includes the

37

specific predictor variables used. This study assessed the most extreme forms of child physician abuse and child sexual abuse. Child abuse in this study was defined as having a physical representation of abuse as a child such as marks, bruises, scrapes, cuts, etc. It did not include other forms of abuse that did not necessarily leave a mark on the body. In addition, in this study, sexual abuse only included being forced to have sex prior to age fourteen. It did not include any other forms of non-intercourse sexual abuse such as other unwanted touching, sexual harassment, or even attempted rape. In addition, the study did not assess other types of child maltreatment such as neglect and emotional abuse. These limitations may have caused an underreporting in maltreatment which reduces the generalizability of the findings to only individuals who have experienced the most extreme forms of maltreatment.

Another study limitation is that the population is majority white and majority high income and therefore it may not be generalizable to those at greatest risk. This study examined data from a cross-section of the population which limits the researchers' ability to determine causality. In addition, because the study examined self-reported survey responses, there is the possibility of response bias among the participants. Because the questions are very personal, individuals taking the surveys may not have answered the questions sincerely or may have skipped questions, reducing the response rate.

Future studies may benefit from examining responses from a random sample of students across the United States through a longitudinal study while focusing on those at highest risk. Additionally, future studies can increase generalizability of findings by expanding the definition of child maltreatment to include neglect, psychological abuse, and less severe forms of physical and sexual abuse.

5.3 Implications for Public Health and Recommendations

The findings of this study suggest that among first-year college students in Georgia, nearly 15% have experienced at least one form of child maltreatment, 4.2% have experienced at least two forms of maltreatment, and 0.4% have experienced three forms of maltreatment. About 11% of students experienced severe physical abuse as a child, 3% experienced severe sexual abuse, and 13% witnessed domestic physical abuse as a child. This study suggests that severe forms of child maltreatment affect a significant percentage of college students. Those college students who are affected may be at an increased risk for increased impulsivity, decreased emotional adjustment, increased substance use, and increased binge drinking and therefore any associated psychological and physical health complications. Impulsivity and emotional adjustment were found to mediate the relationship between child maltreatment and substance use and binge drinking. Because of this, interventions that focus on reducing impulsivity and bolstering patience and resistance to urges may decrease substance use and binge drinking among students who have experienced severe child maltreatment. Similarly, interventions that aim to strengthen emotional adjustment to college among students with exposures to severe child maltreatment may have equivalent results. Overall, this study would support any interventions that focus on reducing impulsivity and improving emotional adjustment among individuals with more than one exposure to severe child maltreatment.

5.4 Conclusions

Exposures to child maltreatment have significant implications on the emotional, psychological, and physical wellbeing of young adolescents. This study explored the implications of severe child maltreatment including childhood physical and sexual abuse and

witnessing domestic abuse as a child. This study found that exposures to severe child maltreatment are associated with increased impulsivity, substance use, and binge drinking, and decreased emotional adjustment to college life. This study also found that impulsivity and emotional adjustment were independent partial mediators for the relationship between exposures to child maltreatment and substance use, and exposures to child maltreatment and binge drinking. Among first-year male college students in Georgia, severe child maltreatment has a significant prevalence. This study suggests that interventions aimed at lowering impulsivity and improving emotional adjustment among students with exposures to severe child maltreatment may decrease the prevalence of substance use and binge drinking. This study may also serve to shed light on the detrimental effects that child maltreatment has on individuals well into young adulthood.

REFERENCES

Afifi, T. O., Taillieu, T., Salmon, S., Davila, I. G., Stewart-Tufescu, A., Fortier, J., Struck, S.,

   Asmundson, G. J. G., Sareen, J., and MacMillan, H. L. (2020). Adverse childhood

   experiences (ACEs), peer victimization, and substance use among adolescents. *Child

   Abuse and Neglect.* Advance online publication.

   https://doi.org/10.1016/j.chiabu.2020.104504

American Psychological Association. (2020). *APA Dictionary of Psychology*.

   https://dictionary.apa.org/emotional-adjustment

Baily, J. A. and McCloskey, L. A. (2005). Pathways to adolescent substance use among sexually

   abused girls. *Journal of Abnormal Child Psychology, 33*(1), 39-53. DOI: 10.1007/s10802-

   005-0933-0

Baker, R., & Siryk, B. (1984). Measuring adjustment to college. *Journal of Counseling

   Psychology*, *31*(2), 179-189. https://psycnet.apa.org/record/1984-21813-001

Bandoli, G., Campbell-Sills, L., Kessler, R. C., Heeringa, S. G., Nock, M. K., Rosellini, A. J.,

   Sampson, N. A., Schoenbaum, M., Ursano, R. J., & Stein, M. B. (2017). Childhood

   adversity, adult stress, and the risk of major depression or generalized anxiety disorder

   in US soldiers: A test of the stress sensitization hypothesis. *Psychological Medicine*,

   47(13), 2379–2392. https://doi.org/10.1017/S0033291717001064

Barahmand, U., Khazaee, A., and Hashjin, G. S. (2016). Emotion dysregulation mediates

   between childhood emotional abuse and motives for substance use. *Archives of

   Psychiatric Nursing, 30(*6), 653-659. https://doi.org/10.1016/j.apnu.2016.02.007

Bellis, A. L., Swartout, K. M., and Salazar, L. F. (2020): College-level perceptions of drinking,

binge drinking, and sexual violence perpetration: A multilevel mediation model, Journal of American College Health. Advance online publication. DOI: 10.1080/07448481.2020.1818756

Brandy, J. M., Penckofer, S., Solari-Twadell, P. A., and Velsor-Friedrich, B. (2015). Factors predictive of depression in first-year college students. *Journal of Psychosocial Nursing and Mental Health Services, 53*(2), 38-44. https://doi.org/10.3928/02793695-20150126-03

Brodsky, B. S., Oquendo, M., Ellis, S. P., Haas, G. L., Malone, K. M., and Mann, J. J. (2001). The relationship of child maltreatment to impulsivity and suicidal behavioral in adults with major depression. *The American Journal of Psychiatry, 158*(11), 1871-1877. https://ajp.psychiatryonline.org/doi/full/10.1176/appi.ajp.158.11.1871

Brown, S., Mitchell, T. B., Fite, P. J., and Bortolato, M. (2018). Impulsivity as a moderator of the associations between child maltreatment types and body mass index. *Child Abuse and Neglect, 67,* 137-146. doi: 10.1016/j.chiabu.2017.02.029

Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. (2008). *Child Maltreatment Surveillance, Uniform Definitions for Public Health and Recommended Data Elements.* https://www.cdc.gov/violenceprevention/pdf/CM_Surveillance-a.pdf

Chamorro, J., Bernardi, S., Potenza, M. N., Grant, J. E., Marsh, R., Wang, S., & Blanco, C. (2012). Impulsivity in the general population: a national study. *Journal of Psychiatric Research*, *46*(8), 994–1001. https://doi.org/10.1016/j.jpsychires.2012.04.023

Chartier, M. J., Walker, J. R., and Naimark, B. (2010) Separate and cumulative effects of adverse

childhood experiences in predicting adult health and health care utilization. Child Abuse

and Neglect, 34(6), 454-464. https://doi.org/10.1016/j.chiabu.2009.09.020

Danese, A., Bellis, M. D. D., and Teicher, M. H. (2015). *Biological effects of ACEs*. Academy on

Violence and Abuse. http://www.avahealth.org/aces_best_practices/.

Darlow, V., Norvilitis, J. M., and Schuetze, P. (2017). The relationship between helicopter and

adjustment to college. *Journal of Child and Family Studies, 26,* 2291-2298.

https://doi.org/10.1007/s10826-017-0751-3

Dube, S. R., Miller, J. W. M., Brown, D. W., Giles, W. H., Felitti, V. J., Dong, M., and Anda, R. F.

(2006) Adverse childhood experiences and the association with ever using alcohol and

initiating alcohol use during adolescence. Journal of Adolescent Health, 38(4), 444el-

444e10. https://doi.org/10.1016/j.jadohealth.2005.06.006

Espeleta, H. C., Sharkey, C. M., Bakula, D. M., Gamwell, K. L., Archer, C., Perez, M. N., Roberts, C.

M., Chaney, J. M., Mullins, L. L. (2020) Adverse childhood experiences and chronic

medical conditions: Emotion dysregulation as a mediator of adjustment. *Journal of*

Clinical Psychology in Medical Settings, 25, 572-581. https://doi.org/10.1007/s10880-

019-09639-x

Fergusson, D. M., McLeod, G. F. H., and Horwood, J. (2013). Childhood sexual abuse and adult

developmental outcomes: Findings from a 30-year longitudinal study in New Zealand.

Child Abuse and Neglect, 37(9), 664-674. https://doi.org/10.1016/j.chiabu.2013.03.013

Garner, A. S. (2013). Home visiting and the biology of toxic stress: Opportunities to address

early childhood adversity. *American Academy of Pediatrics, 132*(2), 65-73.

https://portaldeboaspraticas.iff.fiocruz.br/wp-content/uploads/2019/07/S65.full_.pdf

Gerdes, H. and Mallinckrodt, B. (1994). Emotional, Social, and academic adjustment of college

students: A longitudinal study. Journal of Counseling and Development, 72(3), 281-288**.**

DOI:10.1002/j.1556-6676.1994.tb00935.x

González, R. A., Kallis, C., Ullrich, S., Barnicot, K., Keers, R., and Coid, J. W. (2016). Childhood

maltreatment and violence: Mediation through psychiatric morbidity. Child Abuse and

Neglect, 52, 70-84.

https://www.researchgate.net/publication/291421663_Childhood_maltreatment_and_

violence_Mediation_through_psychiatric_morbidity

Harkness, K. L., Bruce, A. E., and Lumley, M. N. (2006). The role of child maltreatment and

neglect in the sensitization to stressful life events in adolescent depression. *Journal of

Abnormal Psychology, 115*(4), 730-741. DOI: 10.1037/0021-843X.115.4.730

Harkness, K. L., and Hayden, E. P. (2020) The Oxford Handbook of Stress and Mental Health.

Oxford University Press.

Herrenkohl, T. I., Hong. S., Klika, J. B., Herrenkohl, R. C., and Russo, M. J. (2013). Developmental

impacts of child abuse and neglect related to adult mental health, substance use, and

physical health. Journal of Family Violence, 28, 191-199.

https://doi.org/10.1007/s10896-012-9474-9

Karatekin, C. and Ahluwalia, R. (2016). Effects of adverse childhood experiences, stress, and

social support on the health of college students. *Journal of Interpersonal Violence, 35*(1–

2), 150–172. https://doi.org/10.1177/0886260516681880

Katz, S. and Somers, C. L. (2017) Individual environment predictors of college adjustment:

Prevention and intervention. *Current Psychology, 36*, 56-65. DOI 10.1007/s12144-015-9384-0

Kenney, S. R., DiGuiseppi, G. T, Meisel, M. K., Balestrieri, S., and Barnett, N. (2019). Poor mental health, peer drinking norms, and alcohol risk in a social network of first-year college students. *Addictive Behaviors, 84*, 151-159. https://doi.org/10.1016/j.addbeh.2018.04.012

Kim, S. T., Hwang, S. S., Kim, H. W., Hwang, E. H., Cho, J., Kang, J. I., and Kim, S. J. (2018) Multidimensional impulsivity as a mediator of early life stress and alcohol dependence. *Scientific Reports, 8*, 4104. https://doi.org/10.1038/s41598-018-22474-8

LaBrie, J. W., Ehret, P. J., Hummer, J. F., and Prenovost, K. (2012) Poor adjustment to college life mediates the relationship between drinking motives and alcohol consequences: A look at college adjustment, drinking motives, and drinking outcomes. Addictive Behaviors, 37(4), 379-386. https://doi.org/10.1016/j.addbeh.2011.11.018

Lai, H. M. X., Cleary, M., Sitharthan, T., and Hunt, G. E. (2015). Prevalence of comorbid substance use, anxiety and mood disorders in epidemiological surveys, 1990-2014: A systematic review and meta-analysis. *Drug and Alcohol Dependence, 154*(1), 1-13. https://doi.org/10.1016/j.drugalcdep.2015.05.031

Leong, F. T., Bonz, M. H., and Zachar, P. (2007) Coping styles as predictors of college adjustment among freshman. *Counselling Psychology Quarterly, 10*(2), 211-220. https://doi.org/10.1080/09515079708254173

Lu, Y., Shorey, R. C., Greeley, C. S., Temple, J. R. (2019). Childhood physical abuse and physical

dating violence in young adulthood: The mediating role of adverse mental health.

Journal of Clinical Psychology, 75(10), 1916-1929.

https://onlinelibrary.wiley.com/doi/epdf/10.1002/jclp.22827?saml_referrer

Mandavia, A., Robinson, G. G. N., Bradley, B., Resslet, K. J., and Powers, A. (2016) Exposure to

child maltreatment and later substance use: Indirect effects of emotion dysregulation

and exposure to trauma. *Journal of Traumatic Stress, 29*(5), 422-429.

https://doi.org/10.1002/jts.22131

McKinney, C., Milone, M. C., and Renk, K. (2011). Parenting and late adolescent emotional

adjustment: Mediating effects of discipline and gender. *Child Psychiatry and Human

Development, 42*, 463-481. https://doi.org/10.1007/s10578-011-0229-2

McLaughlin, K. A., Conron, K. J., Koenen, K. C., & Gilman, S. E. (2010). Childhood adversity, adult

stressful life events, and risk of past-year psychiatric disorder: A test of the stress

sensitization hypothesis in a population-based sample of adults. *Psychological Medicine*,

40(10), 1647–1658. https://doi.org/10.1017/S0033291709992121

Messman-Moore, T. L., Long, P. J., and Siegfried, N. J. (2000). The revictimization of child sexual

abuse survivors: An examination of the adjustment of college women with child sexual

abuse, adult sexual assault, and adult physical abuse. *Child Maltreatment, 5*(1), 18-27.

https://doi.org/10.1177/1077559500005001003

Mwachofi A, Imai S, Bell RA. (2020). Adverse childhood experiences and mental health in

adulthood: Evidence from North Carolina. *Journal of Affective Disorders, 267*, 251-257.

doi: 10.1016/j.jad.2020.02.021.

National Institute on Drug Abuse. (2009). NIDA- Modified Alcohol, Smoking, and Substance

Involvement Screening Test, NIDA Quick Screen (NM ASSIST). Alcohol and Drug Abuse

Institute. http://lib.adai.washington.edu/dbtw-

wpd/exec/dbtwpub.dll?BU=http%3A//lib.adai.washington.edu/instrumentsearch.htm&

TN=Instruments&CS=0&QY=find%20(AccessNo%20ct%20714)&RF=Full&DF=Full&MR=&

NP=3&RL=0&DL=0&XC=&ID=&AC=QBE_QUERY

Post, R. M. and Weiss, S. R. B. (1998). Sensitization and kindling phenomena in mood, anxiety,

and obsessive–compulsive disorders: The role of serotonergic mechanisms in illness

progression. *Biological Psychiatry, 44*(3), 193-206. https://doi.org/10.1016/S0006-

3223(98)00144-9

Reid, G. M., Bowman, C. E. Espelage, D. L., and Green, J. G. (2016) Perceived social support and

mental health among first-year college students with histories of bullying victimization.

Journal of Child and Family Studies, 25, 3331-3341. https://doi.org/10.1007/s10826-016-

0477-7

Rich-Edwards, J. W., Spiegelman, D., Hibert, E. N. L., Jun, H-J., Todd, T. J., Kawachi, I., and

Wright, R. J. (2010). Abuse in childhood and adolescence as a predictor of type 2

Diabetes in adult women. *American Journal of Preventive Medicine, 39*(6), 529-536.

https://doi.org/10.1016/j.amepre.2010.09.007

Rousson, A. N., Fleming, C. B., & Herrenkohl, T. I. (2020). Childhood maltreatment and later

stressful life events as predictors of depression: A test of the stress sensitization

hypothesis. *Psychology of Violence, 10*(5), 493–500.

https://doi.org/10.1037/vio0000303

Roustit, C., Campoy, E., Renahy, E., King, G., Parizot, I., and Chauvin, P. (2011). Family social

environment in childhood and self-rated health in young adulthood. *BMC Public Health,*

   11, 949. https://doi.org/10.1186/1471-2458-11-949

Roy, A. (2005) Childhood Trauma and Impulsivity. Possible Relevance to Suicidal Behavior,

   Archives of Suicide Research, 9(2), 147-151, DOI: 10.1080/13811110590903990

Russell, D., Springer, K. W., & Greenfield, E. A. (2010). Witnessing domestic abuse in childhood

   as an independent risk factor for depressive symptoms in young adulthood. *Child Abuse*

   & Neglect, *34*(6), 448–453. https://doi.org/10.1016/j.chiabu.2009.10.004

Salokangas, R. K. R., Schultze-Lutter, F., Schmidt, S. J., Pesonen, H., Luutonen, S., Patterson, P.,

   Reventlow, H. G. V., Heinimaa, M., From, T. & Hietala, J. (2019) Childhood physical abuse

   and emotional neglect are specifically associated with adult mental disorders. *Journal of*

   Mental Health, 29(4): 376-384.

   https://www.tandfonline.com/doi/full/10.1080/09638237.2018.1521940?needAccess=t

   rue

Shapero, B. G., Black, S. K., Liu, R. T., Klugman, J., Bender, R. E., Abramson, L. Y., and Alloy, L. B.

   (2013). Stressful life events and depression symptoms: The effect of childhood

   emotional abuse on stress reactivity. *Journal of Clinical Psychology, 70*(3), 209-223.

   https://doi.org/10.1002/jclp.22011

Slavish, D. C., Scaglione, N. M., Hultgren, B. A., and Turrisi, R. (2019). An ecological momentary

   assessment of affect, mental health symptoms, and decisions to drink among first-year

   college women: A pilot study. *Prevention Science, 20*, 753-764.

   https://doi.org/10.1007/s11121-018-0966-6

Springer, K. W., Sheridan, J., Kuo, D., & Carnes, M. (2007). Long-term physical and mental health

consequences of childhood physical abuse: Results from a large population-based

sample of men and women. *Child Abuse & Neglect, 31*(5), 517–530.

https://doi.org/10.1016/j.chiabu.2007.01.003

U.S. Department of Health and Human Services, Administration for Children and Families,

Administration on Children, Youth and Families, Children's Bureau. (2020). *Child*

Maltreatment 2018. https://www.acf.hhs.gov/sites/default/files/cb/cm2018.pdf

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention,

Second Injury Control and Risk Survey (ICARIS-2) (2011). OMB Number 200-199-00599.

Atlanta, GA

Wade, M., Zeanah, C.H., Fox, N.A., Tibu, F. Ciolan, L. E., and Nelson, C. A. (2019). Stress

sensitization among severely neglected children and protection by social enrichment.

Nature Communications 10, 5771. https://doi.org/10.1038/s41467-019-13622-3

Wardell, J. D., Strang, N. M. and Hendershot, C. S. (2016). Negative urgency mediates the

relationship between childhood maltreatment and problems with alcohol and cannabis

in late adolescence. *Addictive Behaviors, 56*, 1-7.

https://doi.org/10.1016/j.addbeh.2016.01.003

Whiteside, S. P., & Lynam, D. R. (2001). The Five Factor Model and impulsivity: using a structural

model of personality to understand impulsivity. *Personality and Individual Differences,*

30(4), 669-689.

https://www.sciencedirect.com/science/article/abs/pii/S0191886900000647

Widom, C. S., Czaja, S. J., Bentley, T., and Johnson, M. S. (2012). A prospective investigation of

physical health outcomes in abused and neglected children: New findings from a 30-

year follow-up. *American Journal of Public Health, 102*, 1135-1144.

https://doi.org/10.2105/AJPH.2011.300636

Wyatt, T. J., Oswalt, S. B., and Ochoa, Y. (2017). Mental health and academic performance of

first-year college students. *International Journal of Higher Education, 6*(3), 178-187.

doi:10.5430/ijhe.v6n3p178