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Adverse Childhood Experiences and College Adjustment: A Moderated Mediation Model

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To the Graduate Council:

I am submitting herewith a dissertation written by Pamela Rosecrance entitled "Adverse Childhood Experiences and College Adjustment: A Moderated Mediation Model." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Erin E. Hardin, Major Professor

We have read this dissertation and recommend its acceptance:

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(Original signatures are on file with official student records.)

Adverse Childhood Experiences and College Adjustment: A Moderated Mediation Model

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Pamela Rosecrance

August 2022

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Abstract

Although the effects of adverse childhood experiences have been widely studied in the general population, researchers have just recently begun to examine their effects on college students. Even fewer studies have looked at the impact of adverse childhood experiences on college adjustment. The present study sought to examine mental health concerns as a mediator, first-generation status as a moderator, and the moderated mediation link between adverse childhood experiences and college adjustment. Using this same model, the subconstructs of college adjustment – academic, relational, and psychological functioning – were also investigated. Additionally, we sought to examine differences in the rates of adverse childhood experiences in first-generation versus continuing generation college students. The study was administered to 375 students through online surveys during one semester. Mental health concerns mediated the link between adverse childhood experiences and college adjustment. Generation status was not found to moderate the relationship between adverse childhood experiences and college adjustment or between mental health concerns and college adjustment, and moderated mediation was not supported. These results were the same when analyses were repeated for each of the college adjustment subconstructs. Additionally, we found that first-generation college students reported experiencing significantly higher numbers of adverse childhood experiences and worse college adjustment compared to their continuing generation peers but did not differ on mental health concerns. Of the participants in the study, 67.2% reported experiencing at least one adverse childhood experience, 46.1% reported two or more, and 32% reported three or more.

Keywords: first-generation, adverse childhood experiences, ACEs, college adjustment, mental health

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CHAPTER ONE

Introduction

Adverse childhood experiences (ACEs) are becoming an increasingly popular topic of study, as evidenced by the *American Psychologist's* most recent special issue, "Adverse Childhood Experiences: Translating Research to Action" (Portwood et al., 2021). This is in part because of the lasting and broad-reaching implications they have been shown to have on people's lives (e.g., CDC, 2019). The Centers for Disease Control and Prevention's (CDC) ACEs webpage defines ACEs as all types of potentially traumatic events that occur before the age of 18 (CDC, 2019). Among others, these include experiences such as physical, emotional, and sexual abuse; neglect; witnessing domestic violence; living in foster care; and growing up with someone who has a mental illness.

ACEs are not only concerning due to the immediate impact they have on children but also because of the physical and mental health challenges they put individuals at risk for throughout adulthood. ACEs have been linked to an increased risk of chronic disease, mental illness, injury, and infectious disease (CDC, 2019). ACEs have been shown to have a dose-response effect, meaning that the risk for negative outcomes increases with each additional ACE (Felitti et al., 1998; Forster et al., 2018; Riedl et al., 2020). Just because a child has experienced one or more of these events does not mean they are destined to experience poor outcomes, but it does put the individual at greater risk.

The prevalence and effects of ACEs have primarily been studied within community samples. The initial data collected on ACEs was through a large health maintenance organization, Kaiser Permanente; the second major study on ACEs came from a multi-state phone survey effort called the Behavioral Risk Factor Surveillance System (BRFSS; CDC,

2019). Through these large survey collection efforts, data from members of the general public spanning age groups and backgrounds were gathered and studied.

Adverse Childhood Experiences and College Adjustment

Although there has been significant research on ACEs among community members, college students are an understudied population within the ACEs literature, with relatively few studies conducted thus far (e.g., Hinojosa et al., 2019; McGavock & Spratt, 2014). Given the substantial physical and mental health issues to which ACEs have been linked (e.g., CDC, 2019), there is a great need to investigate and understand how ACEs and their consequences uniquely affect the college student population (Karatekin, 2018; Karatekin & Ahluwalia, 2016; Merians et al., 2019).

An important and broad measure of college student well-being is college adjustment (O'Donnell et al., 2018). College adjustment is defined as a student's ability to adapt to the demands of college (Baker & Siryk, 1989), including to such strains as greater academic stress, moving away from family, navigating campus, making new friends, and managing finances. Contemporary measures of college adjustment (see O'Donnell et al., 2018) have identified three unique domains of adjustment affected by these demands: academic, relational, and psychological. College adjustment is an important construct because it helps college counselors, administrators, staff, and faculty gain a better understanding of what influences students' overall experience of their postsecondary education and in turn informs the implementation of necessary supports.

Additionally, since college adjustment has been shown to predict academic success and retention (Credé & Niehorster, 2012), measures of college adjustment can be used as screeners for students at risk of performing poorly and/or dropping out. Researchers report that difficulties

with adjustment to college lead to an interference “with students’ ability to perform well academically, gain a degree, and find the college experience enjoyable and an opportunity for growth” (Credé & Niehorster, 2012, p. 158). Better college adjustment has been found to be correlated with greater retention (Gerdes & Mallinckrodt, 1994), lower stress (Salami, 2011), better mental health (Chui & Chan, 2017), greater mindfulness (Mettler et al., 2019), better social support (Schneider & Ward, 2003), higher self-efficacy (Chemers et al., 2001), and better attachment (Holt, 2014).

Since higher ACEs have been shown to be predictive of worse mental and physical health (CDC, 2019), greater drug (Forster et al., 2018) and alcohol (Lee & Chen, 2017) use, difficulties with relationships (Poole et al., 2018), and a host of other issues (CDC, 2019), we can reasonably assume that higher ACEs would have negative consequences for students’ ability to adjust to college. Although previous studies have demonstrated the detrimental effects of childhood maltreatment on college adjustment (e.g., Banyard & Cantor, 2004; Elliott et al., 2009), most studies have either looked at a single category of maltreatment or used cumulative measures that have varied from study to study. Utilizing the ACEs questionnaire as a measure of childhood maltreatment provides a way to standardize the study of the effects of poly-victimization and cumulative trauma. Research has just recently begun (e.g., Bell, 2020; Farmer, 2019) to be conducted utilizing the ACEs questionnaire and has shown the negative effects of ACEs on college adjustment. The current study adds to these very recent studies that have used the ACEs questionnaire to examine the effects of childhood maltreatment on college adjustment.

Mental Health Concerns as a Mediator

ACEs are relatively distal to the college experience, so we would expect more proximal factors to mediate the relationship between ACEs and college adjustment. One particularly

relevant factor is a student's mental health, including symptoms of depression, anxiety, and stress they may be experiencing. It has been widely demonstrated that there is a strong, graded linear relationship between ACEs and mental health challenges. Greater ACEs have been shown to predict higher levels of depression and anxiety (Chanlongbutra et al., 2018; Chapman et al., 2007; Iniguez & Stankowski, 2016), trauma-related disorders such as posttraumatic stress disorder (Chapman et al., 2007), and overall stress (Chanlongbutra et al., 2018; Karatekin, 2018).

Greater mental health challenges have also been shown to be associated with poorer college adjustment. Specifically, research has shown depression (e.g., Schonfeld et al., 2015; Villatte et al., 2017), stress (e.g., Chemers et al., 2001; Park et al., 2018), and anxiety (e.g., Garcia, 2021; Olasupo et al., 2018) to all be associated with greater difficulties adjusting to college. This makes sense, in that if a student is struggling with their mental health, they would also be more likely to be struggling with facets of college adjustment such as completing their coursework, making friends, and feeling satisfied with their college experience. In this study, I am proposing that greater ACEs may lead to worse college adjustment in part because of the mental health challenges that students face as a result of their ACEs. As mentioned prior, there have been a few studies demonstrating the link between ACEs and college adjustment, but none so far have examined mental health as a possible mediating factor.

Group Differences Based on First-Generation Status

Although some authors define first-generation college students as those whose parents have no post-secondary education whatsoever (e.g., Inkelas et al., 2007), the most common definition used by researchers (e.g., Lundberg, 2012), and the one used by most universities, is students whose parents have not earned a four-year degree. By this definition, accordingly,

continuing generation students refers to college students who have at least one parent who has earned a four-year degree.

Research has shown that first-generation college students face a host of potential barriers compared to their continuing generation peers. These include background factors such as being more likely to come from economically disadvantaged, low-income households (Chen, 2005; Choy, 2001) and experiencing less family support, lower levels of financial support, and less knowledge about higher education (Pascarella, Pierson, Wolniak, & Terenzini, 2004). These also include academic factors such as attending lower performing high schools (Warburton et al., 2001), feeling less academically prepared (Horn & Bobbitt, 2000), and reporting greater difficulty understanding college assignments (Collier & Morgan, 2008).

Finally, first-generation college students face a great deal of barriers that are nonacademic. Researchers have found that this includes having greater responsibilities outside of college (Richardson & Skinner, 1992), being more likely to live off-campus (Pascarella et al., 2004; Saenz & Barrera, 2007), being less likely to develop close relationships (Terenzini et al., 1996), and greater difficulty adjusting to college life overall (Collier & Morgan, 2008). Additionally, first-generation students report higher levels of depression and stress (Jenkins et al., 2013; Mehta et al., 2011; Stebleton et al., 2014) and less familial and social support (Kim et al., 2018). It is reasonable to assume that these additional challenges that first-generation students face would exacerbate the effects of other life issues they are facing on their adjustment to college.

Past research has not examined differences in ACEs among first- and continuing-generation students. However, given that higher ACEs have been associated with being low-income and having less education (Merrick et al., 2018), we would expect that first-generation

students report experiencing higher levels of ACEs. Additionally, based on past research (e.g., Jenkins et al., 2013; Mehta et al., 2011; Stebleton et al., 2014), it would also be likely that first-generation college students report higher levels of mental health concerns. Researchers have found mixed results (e.g., Aspelmeier et al., 2012; Hertel, 2002) between first-generation students and their continuing generation peers on differences in college adjustment. One possible explanation for the mixed results on college adjustment between the two groups in previous research may be due to the fact that first-generation status has not been consistently standardized. In Aspelmeier et al.'s (2012) study, a more inclusive definition was used and no significant differences in college adjustment were found, whereas in Hertel's (2002) study, a stricter definition was used, and significant differences were found. Since I used the strictest definition of first-generation college student in the current study, I expected there would be differences in college adjustment, such that those who are first-generation college students would experience a more challenging time adjusting to college.

First-Generation College Student Status as a Moderator

One possible moderator of the link between ACEs and college adjustment and the link between mental health concerns and college adjustment is college generation status. Based on research on the barriers of being a first-generation college student, generation status would likely moderate the link between ACEs and college adjustment. Thus, if a student is a first-generation college student, it would strengthen the ACEs-college adjustment link. That is, being a first-generation college student would exacerbate the effects of ACEs, as individuals would have worse college adjustment because of the additional barriers that first-generation college students face. Similarly, it is likely generation status would also moderate the relationship between mental health and college adjustment. Thus, if a student is a first-generation college student, it would

strengthen the mental health-college adjustment link. That is, being a first-generation college student would exacerbate this link, as individuals would have worse college adjustment because of the additional barriers that first-generation college students face.

I found one study that examined the moderating effects of generation status on the link between psychological variables and college adjustment. Aspelmeier and colleagues (2012) found that the relation between predictors and outcomes was stronger for first-generation students. Specifically, the researchers found that self-esteem was a stronger predictor of personal and emotional adjustment for first-generation students than it was for their continuing generation peers. I did not find any previous research examining the moderating effects of generation status on the link between ACEs and college adjustment, or any predictor or outcome variables that were similar.

Present Study

Given the significant impact of adverse childhood experiences on mental health (CDC, 2019), it is important to contribute to the growing body of literature examining the effects of adverse childhood experiences on the lives of college students. Among college students, adverse childhood experiences have been shown to be predictors of both greater mental health concerns (Karatekin, 2018) and poorer college adjustment (Kalpidou et al., 2021). Additionally, mental health concerns have been associated with poorer college adjustment (Chui & Chan, 2017). To my knowledge there have been no studies yet looking at mental health concerns as a possible mediator between adverse childhood experiences and college adjustment. Additionally, no prior studies have examined how the effects of adverse childhood experiences on college adjustment may depend on generation status. Therefore, the aim of the present study is to address this gap in the literature. My hypothesized conceptual model is illustrated in Figure 1. In this study, I also

explored constructs within college adjustment (e.g., relational, psychological, and educational functioning) as well, but did not make direct hypotheses given that findings in the literature have been mixed. The present study had three specific goals.

Goal 1

The first goal was to examine mean-level differences in ACEs, mental health, and college adjustment between first-generation college students and continuing generation college students.

Hypothesis 1. First-generation college students would report greater levels of ACEs compared to continuing generation college students. This prediction is based on research showing that first-generation college students report experiencing significantly more symptoms of posttraumatic stress disorder (PTSD; Jenkins et al., 2013). Additionally, first-generation college students and those with high ACEs are more likely to come from low-income households (Bui, 2002; CDC, 2019) and are less likely to complete as much college as their continuing generation peers and those with low ACEs (Ishitani, 2003).

Hypothesis 2. First-generation college students would report greater levels of mental health challenges compared to continuing generation college students. This hypothesis is based on research showing that first-generation college students report experiencing significantly higher levels of depression compared to their continuing generation peers (Stebbleton et al., 2014)

Hypothesis 3. First-generation college students would report lower levels of college adjustment compared to continuing generation college students. Although findings on differences in the college adjustment of first-generation college students compared to their continuing generation peers have been mixed (Aspelmeier et al., 2012; Bartels, 1995; Hayes, 2006; Hertel, 2002), first-generation students report significantly less support (Terenzini et al., 1996), are more likely to drop out (Lohfink & Paulsen, 2005), and report feeling less

academically prepared compared to their peers (Bui, 2002), which are all variables that indicate poorer college adjustment.

Goal 2

The second goal was to understand how the combination of proximal (i.e., mental health) and distal (i.e., ACEs) factors influences college adjustment.

Hypothesis 4. Mental health concerns would mediate the link between ACEs and college student adjustment. In other words, greater levels of ACEs would be related to greater mental health concerns, which as a result would be related to lower college adjustment. This is based upon research demonstrating that higher ACEs are associated with greater mental health challenges (Chanlongbutra et al., 2018; Chapman et al., 2007; Iniguez & Stankowski, 2016; Karatekin, 2018) and that poor mental health negatively impacts college adjustment (Schonfeld et al., 2015).

Goal 3

The third goal was to explore the role that generation status has in the relationship (1) between ACEs and college adjustment, and (2) between mental health and college adjustment.

Hypothesis 5. Generation status would moderate the effects of ACEs and mental health concerns on college adjustment, such that:

H5a. The relationship between ACEs and college adjustment would be stronger for first-generation college students compared to their continuing generation peers.

H5b. The relationship between mental health and college adjustment would be stronger for first-generation college students compared to their continuing generation peers. This is based upon research showing that the relationship between psychological variables and academic outcomes is stronger for first-generation college students (Aspelmeier et al., 2012).

H5c. Generation status would moderate the mediated relations of ACEs via mental health concerns with college adjustment. In other words, the relation between mental health concerns and college adjustment, along with their second stage conditional indirect effects on college adjustment, would be stronger for first-generation college students and weaker for continuing generation students.

CHAPTER TWO

Literature Review

Adverse Childhood Experiences

Adverse childhood experiences (ACEs) are a collection of events and circumstances experienced before the age of 18 that have been linked to negative physical and mental health outcomes (CDC, 2019). Additionally, ACEs are linked to future victimization and perpetration of violence (CDC, 2019), as well as limitations in future educational and occupational opportunities (CDC, 2019). The idea that catalyzed the study of ACEs came from Dr. Vincent Felitti, head of the Department of Preventive Medicine at Kaiser Permanente in San Diego, California (Stevens, 2007). Dr. Felitti was in charge of running a weight loss clinic and he began to notice that about half of his patients were dropping out of treatment prematurely despite successfully losing weight. He began to interview patients who had dropped out of the clinic in order to determine why patients were leaving. Although it was not part of his normal questioning, one patient revealed that she was sexually assaulted at the age of four, which prompted Felitti to wonder if this could be related to other patients' weight gain as well. After this chance admission, he began asking other patients who had dropped out of the program early about childhood sexual abuse history and began to notice a pattern. From his and other doctors' interviews with patients, he determined that weight gain might be a coping mechanism in response to depression and anxiety stemming from negative experiences in childhood. Vincent Felitti then teamed up with Robert Anda from the Centers for Disease Control and Prevention and, in two waves, surveyed 17,337 Kaiser patients, between 1995 and 1997, on their exposure to adverse childhood experiences (CDC, 2019).

In the past, different types of childhood trauma had primarily been studied in terms of their individual effects (e.g., the effects of physical abuse; Chapman et al., 2007). However, research has shown that different types of childhood trauma have a cumulative effect on psychological and physical health (Agorastos et al., 2014; Felitti et al., 1998) and, therefore, there is utility in studying different types of trauma simultaneously. ACEs are classified into one of three categories: abuse (i.e., physical, emotional, sexual), neglect (i.e., physical, emotional), or household challenges. Within the household challenges category, subcategories include living with someone with a drug or alcohol problem, living with someone with a mental illness or who died by suicide, having parents who separated or divorced, witnessing domestic violence, or living with someone who went to prison.

All participants in the CDC-Kaiser study were asked about each of these experiences except for emotional neglect, which participants were only asked about in wave 2 of the study (CDC, 2019). Participants were also asked a variety of questions regarding demographics (e.g., gender, income), disease risk factors (e.g., smoking, drinking), mental health (e.g., depressive symptoms) and physical health (e.g., days missed from work) in order to examine the relationship between ACEs and overall health. Of the 17,337 individuals who participated in the study, 54% were women, 46% were 60 years old or over, 36% had some college, and 39% had completed college. The most commonly endorsed ACE was physical abuse (28%), then living with someone with a drug or alcohol problem (27%), next parental separation/divorce (23%), followed by sexual abuse (21%). The least prevalent subcategory endorsed was living with someone who was incarcerated, followed by physical neglect (10%). A third of participants reported experiencing zero ACEs, 26% reported experiencing one ACE, 16% two ACEs, 10% three ACEs, and 13% four or more ACEs.

In 1998, Felitti and colleagues published the first major study on ACEs. The authors examined the link between these negative experiences in childhood and reduced health and well-being in adulthood. Results from 13,494 adult patients in the first wave of data collection during the CDC-Kaiser study were analyzed. The researchers found that, on average, the greater the number of ACEs a person endorsed, the more likely they were to endorse multiple health risk factors related to the leading causes of death. Beyond future health risk factors, a positive correlation was also seen between ACEs and current illness, including heart disease, lung disease, cancer, and liver disease. Regarding mental health, individuals who endorsed four or more ACEs (compared with those who had not experienced any) had a four to twelve times increased risk for depression, drug abuse, alcoholism, and suicide.

Although the Kaiser study limited data collection to a 3-year period (1995-1997), data on ACEs continue to be collected through the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a yearly telephone survey conducted by individual states to collect health information. For the past ten years, 42 states have included ACEs questions—specifically about abuse and household challenges—for at least one year of the survey (CDC, 2019); the survey excludes questions regarding neglect. From 2011-2014, ACEs data were collected from 23 states and 214,157 participants (Merrick et al., 2018). Likely because this is a random phone survey and not a survey for patients who come to a hospital, there was a variety of ages represented, with participants being younger overall than those in the CDC-Kaiser study. Of the participants, 52% were women, 68% were White, 16% Hispanic, 8% Black, 33% had some college, and 26% had a college degree. Participants with less than a high school education reported significantly higher ACEs compared with those who had completed high school or more. The most common ACE endorsed was emotional abuse (34%), followed by living with

someone with an alcohol or drug problem and parental separation/divorce (28% each), and physical abuse (18%). Zero ACEs were reported by 39% of participants, one ACE by 24%, two ACEs by 13%, three ACEs by 9%, and 16% endorsed four or more ACEs. Overall, two thirds of individuals reported at least one ACE and one in five endorsed three or more ACEs.

From analysis of the BRFSS ACEs data, in conjunction with the CDC-Kaiser study data, it has been shown that there is a dosage effect between ACEs and negative health outcomes (CDC, 2019). In other words, the higher an individual's ACE score, the higher their risk for negative health outcomes, including injury (e.g., traumatic brain injury, fractures, burns), mental illness (e.g., depression, anxiety, PTSD, suicide), infectious disease (e.g., HIV, STDs), chronic disease (e.g., cancer, diabetes, heart disease), risky behaviors (e.g., alcohol and drug abuse, unsafe sex), and limited life opportunities (e.g., less education, lower income; CDC, 2019).

In a commentary article on another ACEs study, Felitti (2009) asserted that the majority of our public health issues are due to the behaviors that individuals use to cope with the lasting impact of painful childhood experiences. He described how health risk behaviors such as smoking, over-eating, and substance use assist in providing individuals with relief from the psychological pain they endure as a result of their past; the experiences that individuals have as children stay with them throughout their lifetime. These experiences are generally undetected by medical providers and kept hidden because of secrecy, shame, and the stigma tied to discussing certain topics. Felitti (2009) wrote that in the case of the physical and mental impacts of childhood trauma, "time does not heal; time conceals" (p. 131).

ACEs and Life Opportunity

A study of 27,834 adults from 10 states and the District of Columbia who completed the 2010 BRFSS survey examined the effect of ACEs on life opportunity (Metzler et al., 2017).

The study revealed that individuals who reported higher levels of ACEs were significantly more likely to not have completed high school, to be unemployed, and to be living below the federal poverty line compared with those who reported lower levels of ACEs. Specifically, the authors found individuals who reported four or more ACEs were more likely to report not completing high school and to be living in poverty. Further, people who reported three or more ACEs were significantly more likely to have reported periods of unemployment compared to those with two or fewer ACEs. Metzler and colleagues (2017) asserted that it is important to broaden the narrative regarding ACEs so that the public understands the strong link between experiences in childhood and poverty in adulthood, as well as how this link contributes to the intergenerational transmission of poverty.

ACEs and Physical Health

Higher levels of ACEs are associated with higher risk of chronic disease (e.g., heart disease, type 2 diabetes, cancer), infectious disease (e.g., HIV, STIs), injury (e.g., fractures, burns, traumatic brain injury), and poor maternal health (e.g., fetal death, birth complications; CDC, 2019). Felitti (2009) described that medical diseases manifest by way of ACEs through two mechanisms. The first is from disease as a product of maladaptive coping behaviors such as smoking, overeating, drug use, and sexual activity. For example, abuse leads to mental health issues (e.g., depression, anxiety, PTSD), which can often lead to overeating resulting in weight gain, which can lead to type 2 diabetes, a precursor to the number one killer in America, coronary artery disease. The second mechanism is through chronic stress and the deleterious effects it has on physical health. Felitti (2009) argued that the practice of medicine must move from a treatment model that simply reduces symptoms after the fact to one that is comprehensive and preventative.

ACEs and Mental Health

Chapman and colleagues (2004) analyzed data from 9,460 patients in the first wave of the CDC-Kaiser study to examine the relationship between the number of ACEs endorsed and an individual's risk of depressive disorders. Participants averaged 56.6 years old with 54% women, 75% White, and 42% graduated from college. Female participants were more likely than men to have a recent depressive disorder (15.7% vs. 8.4%, respectively), in addition to being more likely to have had a depressive disorder sometime in their life (28.9% vs. 19.4%). Results demonstrated that the more ACEs a person endorsed, the more likely they were to have had or currently have symptoms meeting criteria for a depressive disorder. Overall, women reported experiencing higher numbers of ACEs, with 20.8% of women endorsing three or more ACEs compared to 14% of men. Among women, each ACE was significantly correlated with greater chances of experiencing a depressive disorder. With the exception of living with someone who went to prison or having parents who separated, this was the same among men. Emotional abuse was the ACE most predictive of both current and lifetime depressive disorders in both men and women.

In further support of the effects of ACEs on mental health, research from McCauley et al. (1997) found that women who had reported abuse during childhood had significantly higher scores of depression, anxiety, and somatization, as well as lower self-esteem compared to women who denied experiencing childhood abuse. The authors also found that the effects of childhood abuse are often as strong as the effects of current abuse on mental health. Similarly, in their longitudinal study following 1037 individuals from childhood to age 32, Moffitt and colleagues (2007) found that higher levels of childhood maltreatment strongly predicted an adult diagnosis of generalized anxiety disorder (GAD).

In addition to GAD, posttraumatic stress disorder (PTSD) has also been correlated with higher levels of ACEs (van der Feltz-Cornelis et al., 2019). In a study of 298 patients at an outpatient clinic, the authors found that ACE scores were the highest in individuals with PTSD and co-morbid disorders compared with those diagnosed with only one depressive or anxiety disorder. Moreover, Dube and colleagues (2001) found that ACEs are strongly linked to suicide risk. Analyzing data from the 17,337 adults in the CDC-Kaiser study, they found a graded effect: for each additional ACE, individuals were increasingly likely to have attempted suicide. Among those who reported no ACEs, only 1.1% reported a suicide attempt, compared to 35.2% of individuals who reported seven or more ACEs.

ACEs and College Students

Research on ACEs in the college student population has recently emerged and is gaining momentum. Below is an overview of the studies that have been conducted with this population thus far. A study conducted in Ireland by McGavock and Spratt (2014) found that 35% of college students ($N = 765$) surveyed reported at least two ACEs. Another study found that 29% of students experienced two or more ACEs (Karatekin, 2018). A third study of ACEs in college students at the University of Minnesota found that nearly 40% of students ($N = 2,023$) reported two or more ACEs (Lust & Golden, 2015). Lastly, an even larger study of 8,997 undergraduate students from 20 colleges found that 72% of students reported one or more ACEs, 47% two or more, 31% three or more, 19% four or more, and 12% five or more (Merians et al., 2019). These prevalence rates are generally similar to those observed in the general population during the CDC-Kaiser study (38% two or more; CDC, 2019). Additionally, similar results were found compared to community samples in that there was a graded linear relationship between ACEs and both physical and mental health.

Retention and Academic Success. In a study that followed 210 first-year undergraduate students for four years, researchers found that those who reported experiencing at least one type of abuse (i.e., physical, sexual, or emotional) during childhood were much more likely to drop out of college after their first semester (Duncan, 2000). Those who experienced multiple forms of abuse were least likely to be enrolled by the second semester (73%) compared to students who reported no abuse (93%). This gap widened by year four, when only 35% of multiple-abuse survivors were still enrolled compared to 60% of non-victims. The researchers from this study emphasized the importance of conducting research with first-semester and first-year students since drop-out rates for students who report experiencing abuse as children increase at a higher rate by semester compared to students who do not report abuse.

Although ACEs have been shown to be strongly linked to retention, one study found that students exposed to different levels of ACEs did not have significantly different GPAs (Merians et al., 2019). This indicates the possibility that for students who leave college and have higher levels of ACEs, leaving may more likely be voluntary and due to social-psychological reasons versus dismissal due to poor academic performance.

Mental Health, Stress, and Support. The aforementioned study at the University of Minnesota found that those with higher levels of ACEs felt more stressed and less supported (Lust & Golden, 2015). It was also found that those who had higher levels of ACEs had worse mental health, even after controlling for stress and social support. In another study of college students, Karatekin (2018) found that ACEs predicted mental health decline over the course of the semester. He also found that the current number of stressors a student reported experiencing mediated the relationship between ACEs and mental health. Karatekin (2018) asserted that screening for ACEs could be helpful in identifying students who are at high risk for declining

mental health. He suggested that because stress was a mediator, interventions targeting stress could be especially helpful for students with high levels of ACEs. Moreover, he asserted that both more research and interventions are needed to increase help-seeking in college students (Karatekin, 2018).

Summary of ACEs Research

ACEs consist of potentially traumatic experiences that have occurred during childhood, including abuse, neglect, and household dysfunction (CDC, 2019). As an individual's number of ACEs increases, so does their risk for both physical and mental health challenges. Higher ACEs are linked to a greater risk of poor physical (e.g., heart disease, cancer) and mental (e.g., depression, PTSD) health outcomes (CDC, 2019). Increased levels of ACEs are also associated with lower life opportunities, such as being at greater risk of not graduating college, being unemployed, and living below the federal poverty line (Metzler et al., 2017).

Hamby et al. (2021) stated that the most impactful finding from research on ACEs over the last twenty years has been the uncovering of the significant dose-response effect, including the substantial added risk found for individuals who reported four or more ACEs. In addition to the traditional ACEs, Hamby et al. (2021) emphasize that experiences outside of the home also contribute to an individual's experience of cumulative trauma. These include peer victimization, community violence, and racism.

Hamby and colleagues (2021) also report that discussion of ACEs is increasingly including considerations of resilience. Longhi et al. (2021) found that resilience has a mitigating effect on community-wide mental and health, behavioral issues, and educational/occupations outcomes, independent of levels of ACEs, income, and race/ethnicity. In addition to greater discussion of resilience, there has also been an increase in research on examining specific

positive childhood experiences and poly-strengths. Burgeoning research on these topics is demonstrating that strengths on the individual, family, and community level may have a positive dose-response effect (Hamby et al., 2021).

Although relatively few studies have been published on ACEs within the college student population, the research that has been conducted has found college students to have similar levels of ACEs compared to the general population (Karatekin, 2018; Lust & Golden, 2015; McGavock & Spratt, 2014). Additionally, a graded, linear relationship has been observed in college students, with more ACEs being linked to poorer mental and physical health outcomes (Lust & Golden, 2015). The emerging body of research on ACEs and college students has found that greater ACEs are associated with a higher risk of dropping out of college (Duncan, 2000), increased stress (Karatekin, 2018), and perceptions of less social support (Lust & Golden, 2015). Therefore, the extant literature strongly indicates that higher ACEs would have a detrimental effect on college adjustment.

College Student Mental Health

Ibrahim, Kelly, Adams, and Glazebrook (2013) conducted a meta-analysis on research studies published from 1990 to 2010 reporting on rates of depression among college students. They found that rates of depression reported spanned from 10% to 85% across studies with a mean weighted prevalence of 30.6%, which is significantly higher than the 9.6% prevalence rate found in the general public (Ibrahim et al., 2013). Not only do college students experience greater rates of depression compared to the general population, but university counseling centers are seeing an increase in students presenting with mental health concerns. In a survey of university counseling centers nationally, 90% of centers reported an increase in students presenting with symptoms of anxiety over the past five years and 58% reported an increase in

students presenting with clinical depression (Gallagher, 2014). Similarly, Prince (2015) reported that a greater number of students are presenting to counseling centers with increasingly severe concerns.

Although students' severity of mental health issues has been increasing, treatment does not seem to be keeping up. In a thirteen-year study of 13,257 students who sought personal counseling, researchers discovered that despite students presenting with more complicated issues and an increase in service utilization, there was an increasing emphasis on session limits and on addressing situational problems over chronic issues such as childhood trauma (Benton, Robertson, Tseng, Newton, & Benton, 2003).

Not surprisingly, researchers have found that psychological distress, including depression, anxiety, and stress, have negative effects on college student success, retention, and adjustment. The American College Health Association surveys students across the country every semester to collect data on college student health through the National College Health Assessment. The last administration of the survey included data from 98 institutions and 54,497 student respondents (American College Health Association, 2019). Results from the survey showed that over the past 12 months 57.6% of students reported experiencing above average stress and 12.8% reported tremendous stress. When asked if students had been treated for and/or diagnosed with any psychological conditions, 24% endorsed an anxiety disorder, 20% depression, and 12.3% endorsed panic attacks. The percentage of students who reported considering suicide in the past 12 months was 14.4%. A majority of students (66.4%) reported overwhelming anxiety in the past 12 months and 72% reported feeling very sad over that same time period. Students also reported the psychological factors that affected their individual

academic performance within the last 12 months: 29.5% endorsed anxiety as affecting their academic performance, 21.6% depression, and 36.5% said stress.

Depression has been shown to negatively impact college students' academics and retention. In a study conducted by Eisenberg, Golberstein, and Hunt (2009), depression was found to significantly predict worse academic performance and dropping out of university prematurely. For students who met criteria for an anxiety disorder, the relationship was even stronger.

In regards to the effect of students' mental health on their adjustment to college, in their meta-analysis on college adjustment research, Credé and Neihorster (2012) found that students prone to depression, among other mental health challenges, were more likely to withdraw socially, which may negatively impact overall adjustment to college—especially social adjustment. In a study specifically on the effects of mental health on college adjustment, Chui and Chan (2017) found that students who reported better overall mental health were more likely to also report better adjustment to college. They also found that social support was a protective factor, in that higher levels of social support were positively associated with adjustment and negatively related to depression.

Researchers have also looked at the relationship between the utilization of counseling services and academic performance. Lee, Olson, Locke, Michelson, and Ode (2009) collected data from 10,009 college freshman and transfer students measuring their use of counseling services, retention, and academic performance. They found that students who had utilized counseling services were significantly less likely to drop out of college but no more likely to have better academic performance when controlling for high school academic performance. Academic performance was measured by GPA and change in credits from the beginning to end

of a semester (with a decrease denoting worse performance), while retention was measured by third semester registration (Lee et al., 2009). These results are consistent with other studies showing that utilization of counseling services is positively correlated with retention (Illovsy, 1997; Turner & Berry, 2000; Wilson, Mason, & Ewing, 1997). Additionally, Lee and colleagues (2009) found that students' academic performance in high school was not related to retention. Thus, in this study, utilization of counseling was more predictive of retention than academic performance. Based on their findings, the authors suggest that social and psychological factors may be more important to retention than academic performance.

First-Generation College Students

College students are considered to be first-generation when neither of a student's parents have earned a four-year degree. Far fewer first-generation college students who enroll in college graduate with a degree (24%) compared to continuing generation students (68%; Chen, 2005). Universities have greater difficulty retraining first-generation college students compared to their continuing generation peers. Research on college student retention has examined many different influences on retention including demographic, academic, psychological, social, cognitive, and institutional factors. What has been studied less are nonacademic historical factors, such as adverse childhood experiences (ACEs).

Universities across the U.S. are explicitly working to increase enrollment of traditionally underrepresented groups including women, racial/ethnic minority students, and students from diverse socioeconomic backgrounds. Enrollment of these underrepresented groups has been increasing over the decades (Pascarella & Terenzini, 2005), as has enrollment of first-generation college students (Strayhorn, 2006). First-generation college students make up a larger proportion

of the students at U.S. colleges now than in previous decades (Housel & Harvey, 2009), with one in six students at 4-year colleges in the U.S. identifying as first-generation (Saenz et al., 2007).

Despite first-generation college students enrolling in college at higher rates than in previous decades, they face unique challenges to successfully completing a bachelor's degree. As noted above, only approximately 25% of first-generation students graduate college compared to approximately 68% of continuing generation students (Chen, 2005). In order to gain an understanding of why this gap exists, there has been a great deal of research on the characteristics and experiences of first-generation college students. Research on first-generation students has focused on studying the effects of background factors, academic factors, and nonacademic factors.

Background Factors

Background factors include variables such as demographics and family characteristics. First-generation college students have been shown to face unique challenges in college based upon their upbringing before arriving at college. For instance, they are more likely to come from economically disadvantaged, low-income households (Chen, 2005; Mehta et al., 2011) and belong to a minority ethnic group (Crisp & Nuñez, 2014). There is evidence that first-generation students perceive less family support, lower levels of financial support, and begin college with less knowledge about higher education (Pascarella et al., 2004).

Academic Factors

First-generation college students also show differences regarding academic variables. Research over the years has repeatedly found that, on average, first-generation college students earn lower grades, enroll in fewer credits, and drop out of college at higher rates than continuing generation students (Housel & Harvey, 2009; Mehta, Newbold, & O'Rourke, 2011; Strayhorn,

2006). Additionally, first-generation college students are more likely to have attended lower performing high schools than continuing generation students (Warburton et al., 2001), are less likely to feel prepared academically for college (Horn & Bobbitt, 2000), and report lower expectations related to their academic performance compared to their peers (Pratt et al., 2019). First-generation college students are also more likely to report more problems with understanding college assignments (Collier & Morgan, 2008).

Due to these inequities in academic variables, first-generation college students have a greater need for additional supports including tutoring, mentoring and social support (Warburton et al., 2001). Academic integration on campus is also an important factor since it has been connected to positive academic achievement (Strayhorn, 2006). Comprehensive programs for first-generation college students that help to remediate these differences are one way to help promote academic equity among them and their continuing education peers.

Nonacademic Factors

Factors affecting first-generation college students outside of those related to background and academics include work hours, residence location, campus experiences, relationships and psychological health. Pratt and colleagues (2019) found that first-generation college students were significantly more concerned about finances. They also found that they were more likely to be planning to work consistently throughout their time at college. Mehta et al. (2011) found that first-generation college students, in fact, do end up working more hours and more often rely on grants and student loans to fund their education. Similarly, Chen (2005) found that first-generation students are more likely to attend college part-time, possibly because of their need to work. Additionally, first-generation college students were found to more commonly live off-campus during college (Saenz & Barrera, 2007). Pratt and colleagues (2019) described that these

types of factors hinder first-generation college students' social and campus engagement. Mehta et al.'s study (2011) confirms this, as first-generation college students were found to be less involved on-campus and socially.

Significant differences in mental health also have been found between first- and continuing generation students. Stebleton et al. (2014) found that "first-generation students at large public research universities reported higher levels of depression and stress on average compared with continuing generation students" (p. 13). Jenkins et al. (2013) found that first-generation college students reported experiencing greater PTSD symptoms compared to their continuing generation peers. First-generation college students also reported higher levels of stress while in college compared to their peers (Mehta et al., 2011).

Support has also been shown to be unique for first-generation students. Overall, first-generation college students report less familial and social support (Collier & Morgan, 2008; Jenkins et al., 2013; Mehta et al., 2011). Pratt and colleagues (2019) found that first-generation students reported lower expectations regarding fitting into the campus environment and making new friends compared to their counterparts. McConnell (2000) found that first-generation students perceived their parents to be less supportive and encouraging of their decision to go to college than their peers.

College adjustment has been shown to be an important factor in college student success and retention for first-generation college students, in addition to college students generally. Researchers have found that generation status moderates the relationship between psychological and academic outcome variables, with the relation between predictors and outcomes being stronger for first-generation students (Mehta et al., 2011). Aspelmeier and colleagues (2012) found that the relationship between self-efficacy and college adjustment was strongest for first-

generation students. The researchers found this to be true for the relationship between locus of control and college adjustment as well.

Although generation status has shown to be moderator of adjustment, researchers have found mixed results indicating mean-level differences of adjustment between first-generation students and their continuing generation peers. Aspelmeier and colleagues (2012) and Bartels (1995) both found no significant differences in reported social, personal, or academic adjustment between the two groups. Conversely, Hertel (2002) found that first-generation college students reported lower levels of social adjustment but similar levels of overall, personal, and academic adjustment. This is consistent with research showing that first-generation college students report less social support (Hertel, 2002; Jenkins et al., 2013; Kim et al., 2018). For example, Jenkins and colleagues (2013) found that first-generation college students reported perceiving less parental and peer support compared to continuing generation peers.

One possible explanation for the lack of differences in college adjustment between the two groups may be due to the way that first-generation status has traditionally been measured. Most studies have only included parental education in the calculation of generation status, but sibling education level may also have an effect on college adjustment and other important factors impacting college experience. It would be reasonable to assume that students who had an older sibling who attended college may show better adjustment due to the information and support provided by the sibling.

Another possible explanation for the lack of differences between the two groups in college adjustment may be due to the way that first-generation status has traditionally been measured. Most studies have only included parental education in the calculation of generation status, but sibling education level may also have an effect on college adjustment and other

important factors impacting college experience. Kim et al. (2018) sorted students into three categories: continuing generation students who had a parent who attended college (CGCSs), first-generation college students who were the first in their families to attend college (F-FGCSs), and first-generation college students with siblings who had attended college (FGCSs-OS; 2018). Results of their study demonstrated that those who had a sibling who had attended college reported similar experiences to those who had a parent who attended college, both of which were different from the experiences reported by students who were the very first in their immediate family to attend college. Specifically, F-FGCSs reported significantly less parental, peer, and institutional support for attending college and had a lower likelihood of being academically successful. Kim et al. (2018) assert that there is a need for university policies to recognize and take into account the specific needs of these two distinct groups of FGCSs.

Summary of Research on First-Generation College Students

First-generation college students face unique challenges transitioning and adapting to college compared to their continuing generation peers. There are differences between first-generation college students and their continuing generation peers in background factors including demographics, financial resources, and information regarding college life. Additionally, they report differences in nonacademic factors such as support, living arrangements, adjustment to college, and health. Academically, findings suggest differences between first-generation students and their peers in academic factors such as retention and GPA. Given the differences between first-generation college students and their peers, it is important to continue to understand the precipitating factors that present challenges for these students. Gaining a greater understanding of experience at college for first-generation students allows for better support of these students through the implementation of well-informed interventions.

College Adjustment

Adjustment to college has been widely studied over the years, mainly due to universities seeking to better understand college students' experiences at university, why some college students are more academically successful, and why some students leave college before graduation while other students persist. Credé and Niehorster (2012) stated that college adjustment is the missing link between studies that solely focus on academic achievement and those that only focus on retention. While some students leave university via dismissal due to low grades, many students decide to leave college because they were not able to adapt to the new college environment (Kerby, 2015). O'Donnell and colleagues (2018) asserted that college adjustment is a key indicator of college student well-being and that detecting adjustment issues early on would help to decrease the number of students dropping out. They also found college adjustment to be valuable as a predictor, mediating, and outcome variable.

In their development of the widely used Student Adaptation to College Questionnaire (SACQ), Baker and Siryk (1989) argued for a multidimensional approach to college adjustment and organized adjustment into four subcategories based upon previous research: academic adjustment (Baumgart & Johnstone, 1977), social adjustment (Wright, 1973), personal-emotional adjustment (Kramer, 1980), and attachment to the institution (Munro, 1981). O'Donnell and colleagues (2018) developed the College Adjustment Questionnaire (CAQ) as a more succinct alternative to the SACQ, with just 15 questions instead of the original 67. During development of the measure, the researchers found evidence for three domains of college adjustment including educational functioning, relational functioning, and psychological functioning. The educational functioning subscale measures academic-related adjustment, the relational functioning subscale focuses on the social aspects of adjustment to college, and the psychological functioning

subscale assesses important qualities of emotional/psychological adjustment to college. The researchers found that the new measure had good convergent validity with the SACQ, evidenced by large positive correlations between participants' subscale scores on the two measures (O'Donnell et al., 2018).

In 2012, Credé and Niehorster completed a meta-analysis of adjustment to college studies. They found evidence to support what previous researchers had claimed, namely that adjustment to college is a multidimensional construct and that these different constructs of college adjustment are uniquely related to specific outcomes and variables. They also found significant evidence that overall college adjustment is predictive of academic success (most commonly measured by college grades) and that college adjustment is “an unusually good predictor of college retention” (Credé & Niehorster, 2012, p. 133). Specifically related to grades, the researchers found that academic adjustment is nearly as strong a predictor of GPA as SAT and high school grades.

College adjustment is not only related to high school grades and academic variables, but also connected to an individual's demographics, core beliefs, personality traits, state and trait affect, coping style, social support, and relationships with parents. These facets are often either facilitators of or challenges to college adjustment. In terms of demographics, young women and men have been shown to report differences in their adjustment to college. Although male students earn significantly lower grades compared to their female peers (Sun, Hagedorn, & Zhang, 2016), multiple studies demonstrate that male students report better overall adjustment to college compared to their female peers (Cliniciu, 2013; Enochs & Roland, 2006; Gadzella & Carvalho, 2006). Additionally, male students tend to have greater social and personal-emotional

adjustment whereas female and male students do not differ on academic and institutional adjustment (Clinciu, 2013).

Students' adjustment to college is also influenced by their personality traits, behaviors, and affect. Not surprisingly, students who report being more conscientious also report better college adjustment (Credé & Niehorster, 2012). Additionally, help-seeking was positively correlated with adjustment to college, demonstrating its role as a possible protective factor against poor adjustment (Holt, 2014). Holt (2014) found that students with more positive attitudes about receiving assistance from others experienced better adjustment to college. Gender differences emerged in the study, showing that female students were more likely to report positive attitudes regarding seeking help, especially in regards to their academics, compared to their male peers. Holt (2014) suggests that because male students report less positive attitudes towards help-seeking, normalizing help-seeking for this group may promote better adjustment to college. Dispositional mindfulness was another trait found by researchers to be a significant protective factor for college adjustment (Mettler et al., 2019). Dispositional mindfulness was defined in the study as an individual's perception of their ability to be aware of the present moment and attend to it. In a study of 101 first-year college students, researchers found that dispositional mindfulness was significantly related to better college adjustment.

Students' beliefs about themselves and their relationship to their environment also affect their ability to adjust to college life. Researchers found that having higher self-esteem and higher self-efficacy were both related to better college adjustment (Aspelmeier et al., 2012; Credé & Niehorster, 2012). In addition to better college adjustment, students who report having higher self-esteem are much more likely to earn a higher GPA (Aspelmeier et al., 2012). Researchers found that self-esteem matters more to the adjustment of some groups than others. For example,

Aspelmeier and colleagues (2012) found that self-esteem was a stronger predictor of personal and emotional adjustment for first-generation college students than it was for continuing generation college students.

In their meta-analysis on college adjustment studies, Credé and Niehorster (2012) found that social support is strongly positively correlated with overall college adjustment, such that students who reported greater levels of social support also reported feeling better adjusted to college. The researchers also reported that peer social support was most significantly positively related to social adjustment while faculty support was most strongly positively correlated with academic and institutional adjustment (Credé & Niehorster, 2012).

Students' perceptions of their influence over their environment, measured by locus of control, was also found to be related to college adjustment (Aspelmeier et al., 2012; Credé & Niehorster, 2012). Those who reported beliefs that represented an internal locus of control were more likely to report better college adjustment and a higher GPA. Conversely, students who reported beliefs that represented an external locus of control reported poorer adjustment and lower GPAs (Aspelmeier et al., 2012). Similarly, locus of control also affected first-generation college students' self-esteem more harshly. Having an external locus of control better predicted poorer adjustment for first-generation college students compared to continuing generation students, but having an internal locus of control predicted adjustment for first-generation college students similarly to their continuing generation peers (Aspelmeier et al., 2012).

Sun and colleagues (2016) found that experiencing homesickness after transitioning to college was related to lower retention, lower academic achievement, and less sense of belonging, which are all factors associated with lower overall adjustment to college. Missing home is a normal and expected experience, but when these feelings become more severe, they are

classified as homesickness. Homesickness becomes problematic when these feelings disrupt students' ability to form relationships and perform academically (Sun et al., 2016). The researchers in this study found that students with lower ACT scores were more likely to experience homesickness, likely because facing greater challenges with their academics encouraged the development of a longing for home. Feeling a greater sense of belonging on campus was shown to be protective against homesickness, such that those who reported a high sense of belonging reported experiencing less homesickness (Sun et al., 2016). Students whose parents had higher levels of education experienced less homesickness than students whose parents had lower levels of education (Sun et al., 2016). The researchers stated they believe that this may be because parents who went to college are able to help students feel more in control in the college environment by providing information on what to expect and how to succeed, whereas students who have parents who did not go to college are less likely to be able to provide this information.

Emotional coping style is another factor that influences students' ability to adjust to college. Students' abilities to cope with their emotions was linked to adjustment, with students who had strong emotion coping skills (i.e., the ability to recognize emotions, attend to them, and repair them effectively) reporting better social adjustment (Johnson, Gans, Kerr, & LaValle, 2010). Students who reported a tendency to avoid their emotions reported facing greater challenges in adjusting to college compared to those who reported effective management of their emotions (Johnson et al., 2010).

Students' relationships with their parents and other family dynamics have also been shown to predict adjustment to college. In a study of 310 first-time college students, family expression of emotion, family cohesion, and family conflict were all related to students'

adjustment to college and psychological distress (Johnson et al., 2010). How students perceive their family's expressiveness growing up is connected to their adjustment while transitioning to college. Specifically, students raised in families who expressed emotions more freely were more likely to report high social adjustment to college. Students who reported less family cohesiveness had poorer academic and social adjustment and reported greater psychological distress after beginning college. Lastly, students who reported more family conflict reported having greater difficulty with personal and emotional adjustment to college (Johnson et al., 2010).

Attachment style has also been shown to predict college adjustment. Students with secure parental attachment reported better overall adjustment than students with insecure parental attachment (Holt, 2014; Wright, Scherman, & Beesley, 2003). Moreover, help-seeking mediated the relationship between attachment and adjustment (Holt, 2014). According to Holt (2014), because insecurely attached students have less positive attitudes towards help-seeking, normalizing help-seeking may result in better adjustment outcomes not only for male students, but also for those students with insecure attachments.

A student's culture and the rurality of the location that they grew up in is an important aspect to consider when thinking about students' experience of adapting to college life, especially given that students from rural areas are an understudied group. In a study of 174 undergraduate students at two southern universities, Wright and colleagues (2003) found that students from rural hometowns and students from non-rural hometowns had similar adjustment to college during the first year. Ames and colleagues (2014) also found no difference between rural and urban students in academic adjustment after controlling for gender and socioeconomic status. Although students from rural and non-rural communities who are attending university did not differ on overall measures of adjustment, Ames and colleagues (2014) found that rural

students had other unique characteristics that are important to consider in future research. Some of these distinctive variables include being less likely to attend more selective colleges, living farther away from friends and family, having to transition to living in a larger town, and adjusting to unique cultural differences.

Summary of College Adjustment Research

College adjustment is an important indicator of college student well-being and has been shown to be a strong predictor of retention and academic achievement (O'Donnell et al., 2018). Researchers have identified both protective and risk factors related to college adjustment. Protective factors that bolster college adjustment include conscientiousness (Credé & Niehorster, 2012); positive help-seeking attitudes (Holt, 2014); dispositional mindfulness (Mettler et al., 2019); higher reported self-esteem, self-efficacy, and internal locus of control (Aspelmeier et al., 2012); and secure parental attachment (Holt, 2014; Wright et al., 2003). Risk factors to poor adjustment include homesickness (Sun et al., 2016), a tendency to avoid one's emotions (Johnson et al., 2010), and less family cohesiveness (Johnson et al., 2010). The newest measure of college adjustment, the College Adjustment Questionnaire (CAQ; O'Donnell et al., 2018), was created as a more concise alternative to the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1989) and has shown good evidence of reliability and convergent validity at its development.

CHAPTER THREE

Methods

Participants

This dissertation study included undergraduate students enrolled in an introductory psychology course at a large public research-extensive university in the southeast. Students who participated in the study all reported being 18 years or older. Data were collected during the 2019-2020 academic year. In March 2020, the university moved to fully virtual services due to the COVID-19 pandemic. Because we would expect this disruption to have a significant effect on mental health concerns and college student adjustment, data from participants ($n = 3$) who completed the survey after campus operations were altered due to COVID-19 were not included in the final sample. In addition, one participant did not consent to the study and therefore was not included. The final sample thus included data from 375 participants. Based on Kenny's (2019) Power and N computations for mediation calculator, this final count exceeded our desired number of participants needed (285) in order to achieve a power of .9 and medium effect sizes on the direct ($\beta = .3$) and indirect ($\beta = .1$) paths.

The 375 participants included in the study ranged in age from 18 to 29 with a median age of 19. In relation to gender identity, 69.6% identified as female, 29.6% identified as male, .5% ($n = 2$) identified as non-binary, and 0.3% ($n = 1$) chose not to answer. In regard to race, 81.3% of participants identified as White, 5.6% as Black/African American, 6.4% as Asian or Asian American, 3.5% bi/multi-racial, 1.1% as Middle Eastern, and 2.1% chose not to respond to the question. Of the 375 participants, 94.9% identified as non-Hispanic, 4.3% as Hispanic, and .8% ($n = 3$) chose not to respond. This racial and ethnic distribution was closely representative of undergraduates the university as a whole. Based upon participants' report of parental education,

24.3% were classified as first-generation college students, 74.9% as continuing generation college students, and 0.8% ($n = 3$) chose not to answer. Fifty-five percent ($n = 205$) were in their first year of college, 26.7% in their second, 12.5% in their third, 5.9% in their fourth, and .3% (1) in their fifth. Participants subjectively rated their socioeconomic status on a scale from 1 to 10 and reported a mean socioeconomic status of 5.67 and median of 6.

In relation to reported adverse childhood experiences, 31.7% reported zero, 21.2% reported one, 14.1% reported two, 10.9% reported three, 5.6% reported four, 5.6% reported five, 5.3% reported six, and 4.5% reported seven to ten. This is similar to the CDC's national averages where they found 36.1% reported zero, 26.0% reported one, 15.9% reported two, 9.5% reported three, and 12.5% reported four or more (CDC, 2019). The average number of reported adverse childhood experiences was two and the median was one. Hardin et al. (2019) found that a wide range of majors are represented in PSYC 110, one of the most popular social science general education courses. Therefore, our sample is likely quite representative of the campus as a whole.

Measures

College Adjustment

The College Adjustment Questionnaire (CAQ) was used to measure college adjustment (O'Donnell et al., 2018). The CAQ consists of 14 items and participants indicate how true each statement is to them regarding their college experience; responses range from 1 (very inaccurate) to 5 (very accurate), with higher scores indicating better adjustment to college. Subscales cover domains of educational, relational, and psychological functioning (see Appendix). The measure was developed from a sample of 301 undergraduate students enrolled in an introductory psychology course at a large university in the United States. The CAQ was shown to evidence good reliability and validity as a measure of college adjustment in this sample (O'Donnell et al.,

2018). Internal consistency was investigated by O'Donnell and colleagues (2018) by calculating inter-item correlations on the measure's subscales, resulting in an alpha of .89 on the Educational Functioning subscale, .84 on the Relational Functioning subscale, and .79 on the Psychological Functioning subscale. Additionally, convergent validity was supported by large positive correlations between the three subscales of the CAQ and the Student Adaptation to College Questionnaire, the most widely used measure of college adjustment (Baker & Siryk, 1989). In the present study, internal consistency coefficients for the subscales were .92 for Academic Functioning, .91 for Relational Functioning, and .84 Psychological Functioning, and .90 for the entire scale.

Mental Health Concerns

Mental health concerns were operationalized using the DASS-21 (Lovibond & Lovibond, 1995), a 21-item self-report measure. Participants indicate how much each statement applied to them over the past week, with four answer choices ranging from "Never" to "Almost Always." Questions assess depression (e.g., "I felt that I had nothing to look forward to"), anxiety (e.g., "I felt I was close to panic") and stress (e.g., "I found it difficult to relax"). Within the DASS-21, validity of scores on the anxiety and depression subscales was supported by its positive correlations with the Beck Anxiety Inventory ($r = 0.81$) and the Beck Depression inventory ($r = 0.74$), respectively (Lovibond & Lovibond, 1995). Validity of scores on the DASS-21 was supported by its significant positive correlation with total HoNOS scores, another broadly used measure of general mental health functioning (Ng et al., 2007). Henry and Crawford (2005) examined psychometric properties of the DASS-21 and reported internal consistency of the DASS-21 total scale to be .93. The alpha for the current sample was .95.

Adverse Childhood Experiences

Cumulative exposure to ACEs was assessed using the Early Adverse Experiences Questionnaire (Felitti et al., 1998). This measure is the most widely used assessment of adverse experiences in childhood. The questionnaire consists of ten questions on the presence or absence of the following experiences before age 18: child maltreatment (i.e., emotional abuse, physical abuse, sexual abuse, neglect), household dysfunction (i.e., substance abuse and mental illness of household members, domestic violence perpetrated against a caretaker, foster care), incarceration of a household member, and parental separation/divorce. Number of experiences reported by each participant is summed for a total ACEs score from 0 to 10. Ford and colleagues (2014) found evidence for strong construct validity in a sample of 27,545 community members on a similar measure of ACEs that did not include neglect.

Demographic Questionnaire

Participants completed a brief demographic questionnaire, which collected information such as age, gender, race, socioeconomic status, and year in school.

Generational Status

Participants were asked to indicate the highest level of education completed by their parents or legal guardians, ranging from “high school or below” to “completed a graduate degree.” Options for “I don’t know” and “No parent/guardian” were included. If information on only one parent/guardian was given, that individual’s level of education was used. If education level was given for two parents/guardians, the highest level of education was used. First-generation students were defined as participants for whom neither parent nor guardian had earned a 4-year college degree.

Procedure

The University Institutional Review Board (IRB) approved the project prior to data collection. Participants were recruited through the psychology department's research participation pool and completed the study by filling out questionnaires using Qualtrics, an online survey system. After signing up for the study, students were provided a link that took them to the informed consent page where they were informed about the study's objectives, the time requirement involved, the risks and benefits of participation, instructions for completing the survey, and their right to end participation in the study at any time without consequences. Students 18 years old and above who were enrolled as undergraduates and who consented to participate were asked to complete the online survey that took approximately 30 minutes. Although the administrator of the research participation pool could access the names of students who participated in the study for the purposes of giving SONA credit, the data are anonymous, and the PI and Co-PI are not be able to link a participant's name with their individual data. Only the PI and Co-PI have access to raw survey data.

CHAPTER FOUR

Results

Preliminary Analyses and Descriptive Data

Data from the 375 participants included in the study were analyzed for missing data patterns. Across all items and for all 375 participants, 0.27% of items were missing; 41.51% of the items were not missing data for any case. Examining individual cases, no participant had more than 1% missing values and 90.13% of participants did not have any missing data. For all participants, item-level missing data were handled by imputing the mean across all completed scale items for the missing value (Parent, 2013). As recommended, we included one instructed response item within each scale (e.g., “Please select somewhat sure”) to detect careless responding (Meade & Craig, 2012). Scale scores were only calculated for participants who correctly answered the instructed response item. Consequently, scale scores were not calculated for 1.1% of participant’s adverse childhood experience scores, 4.5% of college adjustment scores, and 6.1% of mental health concern scores.

The means, standard deviations, and inter-correlations for each variable are presented in Table 1. Univariate normality was assessed by examining the absolute values for skewness (minimum = 0.25, maximum = 1.27) and kurtosis (minimum = 0.20, maximum = 1.14) on each variable. These values indicated adequate normality (i.e., skewness < 3, kurtosis < 10; Weston & Gore, 2006). No multivariate outliers were found using Mahalanobis distance of $p < .001$ (Field, 2013). Correlation analyses revealed that the outcome variable (i.e., college adjustment) was not significantly related to age ($r(356) = .04, p > .05$) but was significantly related to socioeconomic status ($r(356) = .26, p < .05$). Therefore, we used SES as a covariate in the subsequent analyses.

Preliminary analyses revealed no major threats to the assumptions of the mediation analysis. First, bivariate correlations were run to assess whether there was a significant multicollinearity threat that existed among the predictors. None of the correlations exceeded .80, therefore there was no threat of multicollinearity (Williams, 2015). The variance inflation factors for all regression analyses were below 10 (Field, 2013), which further supports a non-threat of multicollinearity. Visual inspection of the P-P plots for each outcome illustrated that the normality assumption of regression was met. Further, visual inspection of the scatterplots for each outcome demonstrated that the homoscedasticity assumption of regression was met.

As presented in Table 1, bivariate analyses revealed that greater adverse childhood experiences were associated with greater mental health concerns ($r(347) = .39, p < .001$) and lower levels of college adjustment ($r(352) = -.31, p < .001$). Adverse childhood experiences were also significantly associated with college adjustment's subconstructs. Specifically, greater adverse childhood experiences were related to lower levels of educational functioning ($r(352) = -.15, p < .001$), lower levels of relational functioning ($r(352) = -.25, p < .01$), and lower levels of psychological functioning ($r(352) = -.32, p < .001$). Greater mental health concerns were significantly associated with lower levels of college adjustment ($r(342) = -.58, p < .001$), educational functioning ($r(342) = -.27, p < .001$), relational functioning ($r(342) = -.45, p < .001$), and psychological functioning ($r(342) = -.62, p < .001$). Bivariate analyses also revealed that generation status was associated with socioeconomic status ($r(372) = .20, p < .01$).

Univariate Analyses

To test Hypotheses 1-3, a series of independent samples *t*-tests evaluated whether first- and continuing generation college students have significant differences in their levels of adverse childhood experiences, mental health concerns, and college adjustment. Supporting Hypothesis

1, analyses found significant differences on adverse childhood experiences. Specifically, first-generation college students ($M = 2.99$, $SD = 0.29$) reported significantly higher levels of adverse childhood experiences compared to their continuing generation peers ($M = 1.74$, $SD = 0.12$, $t(366) = 3.99$, $p < .001$). Contrary to Hypothesis 2, no significant differences were found when comparing reported mental health concerns ($t(350) = .82$, $p = .38$) of first-generation ($M = 1.87$, $SD = 0.67$) and continuing generation students ($M = 1.81$, $SD = 0.62$).

In support of Hypothesis 3, analyses found significant differences on college adjustment. Specifically, first-generation college students ($M = 2.99$, $SD = 0.29$) reported significantly lower levels of college adjustment compared to their continuing generation peers ($M = 3.54$, $SD = 0.78$, $t(351) = -2.31$, $p < .05$). When comparing the two groups on the college adjustment subconstructs, we found significant differences in both educational functioning ($t(370) = -2.06$, $p < .05$) and relational functioning ($t(370) = -2.02$, $p < .05$) but not psychological functioning ($t(370) = -1.02$, $p = .31$). First-generation college students ($M = 3.60$, $SD = 1.01$) reported lower levels of educational functioning compared to continuing generation students ($M = 3.83$, $SD = 0.90$). First-generation college students ($M = 3.06$, $SD = 1.15$) also reported lower levels of relational functioning compared to continuing generation students ($M = 3.33$, $SD = 1.07$). On reported levels of psychological functioning, first-generation college students ($M = 3.31$, $SD = 1.11$) did not differ significantly from their continuing generation peers ($M = 3.44$, $SD = 1.05$).

Although not hypothesized, we also found between group differences in reported socioeconomic status ($t(370) = -4.26$, $p < .001$). First-generation college students ($M = 5.00$, $SD = 1.63$) reported having lower socioeconomic status compared to continuing generation students ($M = 5.87$, $SD = 1.91$).

Mediation Analyses

To test the mediation model described in Hypothesis 4, mediation bootstrap analyses were conducted using model 4 of Hayes' (2017) PROCESS macro in SPSS. We used 10,000 bootstrapping resamples in order to produce 95% confidence intervals for the indirect effects (Mallinckrodt et al., 2006). The mediator is determined to be significant if the confidence interval does not contain zero (Hayes, 2013).

The results of the mediation models can be seen in Figures 2-5. The first test of mediation looked at the relations between ACEs, mental health concerns, and overall college adjustment, controlling for socioeconomic status. In these analyses, the covariate (i.e., socioeconomic status) was found to be positively related to college adjustment (direct [unstandardized] effect = .05; $SE = .02$, 95% CI [-.008, .086], $\beta = .11$). In addition, mental health concerns fully mediated the link between adverse childhood experiences and college adjustment, as evidenced by the significant indirect effect of adverse childhood experiences (via mental health concerns) on college adjustment (mean indirect [unstandardized] effect = -.07; $SE = .01$, 95% CI [-.096, -.048], $\beta = -.53$), but no direct effect of adverse childhood experiences on college adjustment $\beta = -.07$. The variables in this mediation model collectively accounted for 35% of the variance in college adjustment scores.

The model was repeated for the subconstructs of college adjustment. Mental health concerns fully mediated the link between adverse childhood experiences and each of the college adjustment subconstructs, as evidenced by the significant indirect effects of adverse childhood experiences (via mental health concerns) on educational functioning (mean indirect [unstandardized] effect = -.03; $SE = .01$, 95% CI [-.059, -.014], $\beta = -.33$), relational functioning (mean indirect [unstandardized] effect = -.08; $SE = .01$, 95% CI [-.109, -.051], $\beta = -.73$), and

psychological functioning (mean indirect [unstandardized] effect = $-.11$; $SE = .02$, 95% CI $[-.141, -.073]$, $\beta = -.99$), but no direct effect of adverse childhood experiences on educational ($\beta = -.03$), relational ($\beta = -.06$), or psychological ($\beta = -.06$) functioning. The variables in the mediation model collectively accounted for 10% of the variance in educational functioning scores, 21% of the variance in relational functioning scores, and 49% of the variance in psychological functioning scores.

Moderator and Moderated Mediation Analyses

To test the moderated mediation model described in Hypothesis 5, a moderated mediation bootstrap analysis was conducted using model 15 of Hayes' (2017) PROCESS macro in SPSS. We used 10,000 bootstrapping resamples in order to produce 95% confidence intervals for the indirect effects (Mallinckrodt, Abraham, Wei, & Russell, 2006). The moderated mediation is determined to be significant if the confidence interval does not contain zero (Hayes, 2013).

Results of these moderated mediation analyses are shown in Table 2. Contrary to Hypothesis 5, the results indicated that the indirect relation between adverse childhood experiences and college adjustment through mental health concerns does not depend on generation status (Index of Moderation Mediation = $.019$, $SE [boot] = .020$, 95% CI $[-.016, .064]$). Additionally, generation status did not moderate the direct relation between adverse childhood experiences and college adjustment or the direct relation between mental health concerns and college adjustment (see Table 2).

The results were also not significant when the model was repeated for the college adjustment subconstructs. The indirect relation between adverse childhood experiences and each of the college adjustment subconstructs — educational functioning (Index of Moderation Mediation = $.037$, $SE [boot] = .027$, 95% CI $[-.010, .096]$), relational functioning (Index of

Moderation Mediation = .007, SE [boot] = .024, 95% CI [-.038, .058]), and psychological functioning (Index of Moderation Mediation = .011, SE [boot] = .024, 95% CI [-.031, .064]) — through mental health concerns do not depend on generation status. Finally, generation status did not moderate the direct relation between adverse childhood experiences and any of the college adjustment subconstructs or the direct relation between mental health concerns and any of the college adjustment subconstructs (see Table 2).

CHAPTER FIVE

Discussion

The present study builds upon expanding research on the effects of adverse childhood experiences within the college student population, and, specifically, the effects of adverse childhood experiences on college adjustment. The purpose of this study was to examine a mediator, a moderator, and moderated mediation in the relation between adverse childhood experiences and college adjustment. Further, the purpose was to help develop a better understanding of how the combination of proximal and distal factors influences college adjustment. The findings of this study suggest that mental health is a critical factor in understanding how adverse childhood experiences are connected to college adjustment.

Previous research has demonstrated that exposure to greater levels of cumulative childhood trauma is associated with poorer college adjustment (Banyard & Cantor, 2004; Kalpidou et al., 2021). Our study revealed that adverse childhood experiences were indirectly negatively related to college adjustment via mental health concerns. In other words, students with higher levels of adverse childhood experiences had worse college adjustment because of their mental health concerns. Therefore, our study suggests that it is not necessarily the negative events in childhood in and of themselves that make it difficult for students to adjust to college but rather the mental health consequences of those childhood challenges that make college adjustment difficult.

In the current study, there were also direct relations between adverse childhood experiences and mental health concerns as well as between mental health concerns and college adjustment. These results are in alignment with previous studies demonstrating that higher levels of cumulative childhood maltreatment are associated with greater depression and anxiety in the

college student samples (Turner & Butler, 2003; Karatekin, 2018; Fasciano, et al, 2020; Watt et al., 2020) and that poorer mental health negatively impacts college adjustment (Schonfeld et al., 2015). These findings help us to understand why students with higher adverse childhood experiences have greater difficulty adjusting to college.

This study also sought to further literature examining the characteristics of first-generation college students in terms of adverse childhood experiences, mental health concerns, and college adjustment. Whereas many studies have examined differences in the mental health and college adjustment of first-generation college students, very few studies have looked at the prevalence of adverse childhood experiences in this population. Our study revealed that first-generation college students reported greater levels of ACEs compared to continuing generation college students. This supports burgeoning research demonstrating that first-generation college student status is associated with higher exposure to adverse childhood experiences (Dresen, 2018).

Surprisingly, despite higher prevalence of ACEs, first-generation college students did not report significantly greater levels of mental health challenges compared to continuing generation college students. Although previous research has shown that first-generation college students report experiencing significantly higher levels of depression and stress compared to their continuing generation peers (e.g., Jenkins et al., 2013; Mehta et al., 2011; Stebleton et al., 2014), first-generation students in this study did not report significantly greater mental health concerns. The fact that despite having greater ACEs, first-generation college students did not differ in mental health concerns may speak to their resiliency. First-generation college students have had to face many barriers related to the college admissions process and could be more resilient to the

effects of ACEs than their continuing generation peers. Perhaps this is why they report higher ACEs but similar levels of mental health challenges.

Additionally, prospective first-generation college students with high ACEs who actually enroll in college may differ from their prospective first-generation peers who do not end up enrolling in college. These students may have been able to cope more effectively with their ACEs, have had greater support that helped to offset the effects their ACEs, or have experienced particular ACEs that did not have as severe of an impact on their mental health and ability to pursue college.

Our results did reveal significant differences in college adjustment based on generation status. First-generation college students reported significantly lower levels of college adjustment compared to their continuing generation peers. When comparing the two groups on the college adjustment subconstructs, first-generation students demonstrated lower levels of educational and relational functioning. Psychological functioning was not significantly different between the two groups, which aligns with our findings that first-generation college students reported similar levels of mental health concerns compared to their continuing generation peers.

Overall, this adds to a body of research showing mixed findings when it comes to the college adjustment of first-generation college students compared to their peers (Aspelmeier et al., 2012; Bartels, 1995; Hayes, 2006; Hertel, 2002). Given that first-generation students reported significantly more adverse childhood experiences but not mental health challenges, this tells us that first-generation college students do not have worse college adjustment due to their mental health concerns but rather other factors. These factors may include greater financial burdens (Pratt et al., 2019), working more hours (Mehta et al., 2011), living off-campus (Saenz & Barrera, 2007), receiving less information about college from their parents (Palbusa et al., 2017),

receiving less academic preparation (Horn & Bobbitt, 2000), and being less socially engaged (Mehta et al., 2011), which have all been demonstrated as being associated with first-generation status in previous studies.

Finally, this study sought to explore generation status as a moderator. To our surprise, generation status did not moderate the relation between adverse childhood experiences and college adjustment, the relation between mental health and college adjustment, or the indirect relation between adverse childhood experiences and college adjustment. In other words, the nature of the relationships between these variables did not depend on whether a student was a first- or continuing generation student. These results were the same for college adjustment subconstructs.

Although a previous study did find that the relationship between psychological variables and academic outcomes is stronger for first-generation college students (Aspelmeier et al., 2012), this may have been because this study used a different definition of first-generation status that included “participants for whom no member of their immediate family had earned at least an associate's or baccalaureate degree” (p. 762). These differences in results could have been due to the fact that the first-generation college student definition was stricter than in the present study, which included students who had parents and siblings with some college or associate’s degrees. First-generation students in the present study likely had more college-related support and information from parents and siblings compared to the first-generation students in the Aspelmeier et al. (2012) study, potentially weakening this relationship comparatively.

Overall, the relationships between the variables stated above did not differ significantly for first- and continuing generation college students in our study. We had thought that the negative effects of adverse childhood experiences (via mental health concerns) and of mental

health concerns themselves on college adjustment would be exacerbated by all the other barriers first-generation college students face. It seems that this is not the case and possibly speaks to the resilience of first-generation college students and/or the characteristics of the prospective first-generation students who enroll in college.

Since the relations between variables did not depend on first-generation status, one take-away from these findings may be that adverse childhood experiences and mental health concerns are not especially a problem for the college adjustment of first-generation college students but rather factors related to the college adjustment of all students. In other words, the relationships between these variables are important but not differentially important for the two groups.

Limitations and Future Directions

This study is limited by the fact that the research design is correlational and cross-sectional in nature. Therefore, claims about causality cannot be made, particularly, in relation to the link between mental health concerns and college adjustment. Longitudinal and experimental studies are needed to provide a more thorough understanding of the directionality of these relationships. Another limitation of the study is our use of convenience sampling.

The sample was recruited from an introductory psychology course at a large public university in the southeast. Generalizability of our results is limited since our participants were predominately White, cisgender, heterosexual, and from a specific region of the country. For example, compared to White non-Hispanic individuals, the prevalence of ACEs has been found to be lower among Asian non-Hispanic individuals and higher among Black non-Hispanic and Hispanic individuals (Sacks & Murphey, 2018). Therefore, the relation between the variables in this study may look different for members of different racial and ethnic groups.

Further, this study is limited due to the use of self-report measures and the possibility of social desirability bias influencing participants' responses. Since we asked participants to disclose private and sensitive information, they may also have not answered fully given the natural response to avoid acknowledging painful experiences and memories. Due to both of these factors, participants may have underreported their levels of adverse childhood experiences and mental health concerns and overreported levels of college adjustment. Other researchers have acknowledged this inherent limitation within self-report-driven ACEs (e.g., Crouch et al., 2019) and mental health (e.g., Huang et al., 1998) research. With that said, I do not have any reason to believe that this study would have social desirability concerns greater than other studies on these same topics.

Although research on ACEs within the college student population is growing, studies examining the effects of ACEs on college adjustment are extremely limited. Future studies could continue to examine this link as well as other possible mediators and moderators between these two factors. Factors such as support, physical health, substance use, utilization of counseling services, gender, sexual orientation, and race could be explored.

Additionally, although past research has examined childhood trauma among first-generation college students, this appears to be the first study to examine adverse childhood experiences in particular among first-generation college students. Given that this population reported higher adverse childhood experiences, future research could begin to look at the effects of adverse childhood experiences on this population. Further, since findings have been mixed on whether college adjustment differs for first-generation students compared to continuing generation students, future research may continue to examine why these incongruencies exist and work to develop cohesive conclusions about these variables. Finally, future studies could further

examine the prevalence of adverse childhood and mental health concerns in the first-generation college student population and find out if the differences we found generalize to other college student populations. This would enable us to provide better-informed support services for first-generation students in order to help ensure their success in college.

Implications for Clinicians and College Student Personnel

Considering the results of this study, it is important for clinicians and other college personnel to keep in mind that first-generation college students may have experienced greater adverse childhood experiences before arriving at college compared to continuing generation students. This means that they may be experiencing greater challenges that are associated with higher ACEs including being at higher risk for drug/alcohol abuse, interpersonal issues, and physical health problems. Additionally, it is important for college personnel to keep in mind that their first-generation students may be at greater risk for having difficulties adjusting to college, specifically related to their academic and relational functioning. College personnel may also want to keep in mind that if any student is having difficulty adjusting to college life, it may be helpful to consider contributing factors outside of the academic realm. College adjustment is also related ACEs and mental health and therefore personnel should lean into conversations regarding these issues and consider referring students to counseling, if appropriate.

Finally, college counseling centers and their clinicians should consider implementing the ACEs questionnaire as a routine screening measure. This would allow counselors to better understand how challenging experiences from a student's past may be affecting them currently, and help to identify students who are particularly at risk for greater mental health issues and poorer adjustment to college. This would allow great supports to be offered for those students who might not otherwise be identified.

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Appendix

Table 1

Means, Standard Deviations, and Correlations for All Study Variables

Variable	<i>M</i>	<i>SD</i>	Possible Range	1	2	3	3a.	3b.	3c.
1. Adverse Childhood Experiences	2.04	2.25	0 – 10						
2. Mental Health Concerns	1.82	.63	1 – 4	.39***					
3. College Adjustment	3.49	.80	1– 5	-.31***	-.58***				
3a. Educational Functioning	3.78	.94	1 – 5	-.15**	-.27***	.69***			
3b. Relational Functioning	3.26	1.11	1 – 5	-.25***	-.45***	.77***	.18***		
3c. Psychological Functioning	3.40	1.08	1 – 5	-.32***	-.62***	.85***	.48***	.53***	
4. Socioeconomic Status	5.67	1.89	1 – 10	-.19***	-.20***	.26***	.23***	.16**	.21***

* $p < 0.05$, ** $p < .01$, *** $p < .001$

Table 2

Test of Generation Status as a Moderator of Mediator-Criterion and Predictor-Criterion Links.

Criterion	Predictor variable	<i>B</i>	<i>se</i>	<i>t</i>	ULCI	LLCI	<i>R</i> ²	<i>F</i>	<i>df</i>
Mental Health Concerns	ACEs	.11	.01	7.51***	.078	.133	.19	38.29	2, 336
	SES	-.05	.02	-3.11**	-.088	-.020			
College Adjustment	ACEs	-.02	.03	-.79	-.076	.032	.36	30.41	6, 332
	MHC	-.80	.11	-7.15**	-1.016	-.577			
	GS	-.26	.25	-1.04	-.745	.231			
	ACEs X GS	.00	.04	.09	-.067	.074			
	MHC X GS	.18	.13	1.34	-.084	.440			
	SES	.05	.02	1.78	.005	.085			
- Educational Functioning	ACEs	-.01	.04	-.14	-.080	.069	.11	7.12	6, 332
	MHC	-.58	.16	-3.77***	-.886	-.278			
	GS	-.55	.34	-1.60	-1.228	.127			
	ACEs X GS	.00	.05	-.08	-.102	.094			
	MHC X GS	.35	.19	1.92	-.010	.718			
	SES	.09	.03	3.14**	.033	.143			
- Relational Functioning	ACEs	.00	.04	-.09	3.758	5.178	.22	15.48	6, 332
	MHC	-.79	.17	-4.71***	-1.124	-.462			
	GS	.12	.38	.33	-.614	.861			
	ACEs X GS	-.03	.05	-.53	-.135	.078			
	MHC X GS	.07	.20	.35	-.326	.466			
	SES	.01	.03	.35	-.049	.071			
- Psychological Functioning	ACEs	-.06	.04	-1.79	-.133	.006	.40	36.86	6, 332
	MHC	-1.07	.14	-7.45***	-1.356	-.789			
	GS	-.38	.32	-1.20	-1.016	.247			
	ACEs X GS	.05	.05	1.09	-.041	.142			
	MHC X GS	.10	.17	.60	-.236	.442			
	SES	.03	.03	1.30	-.017	.085			

Note. ACEs = Adverse Childhood Experiences; SES = Socioeconomic Status; MHC = Mental Health Concerns; GS = Generation Status; *B*, *se*, and *t* reflect values from the final regression equation; **p* < 0.05, ***p* < .01, ****p* < .001

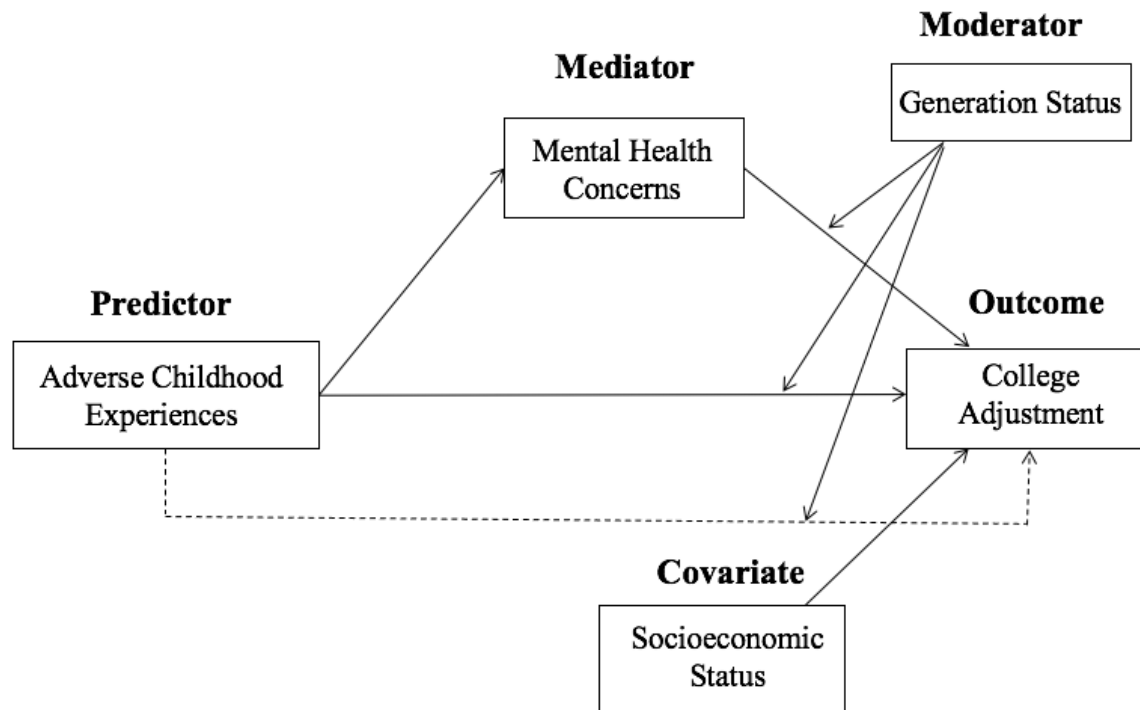


Figure 1. Hypothesized moderated mediation model predicting College Adjustment. Dashed line indicates conditional indirect effect.

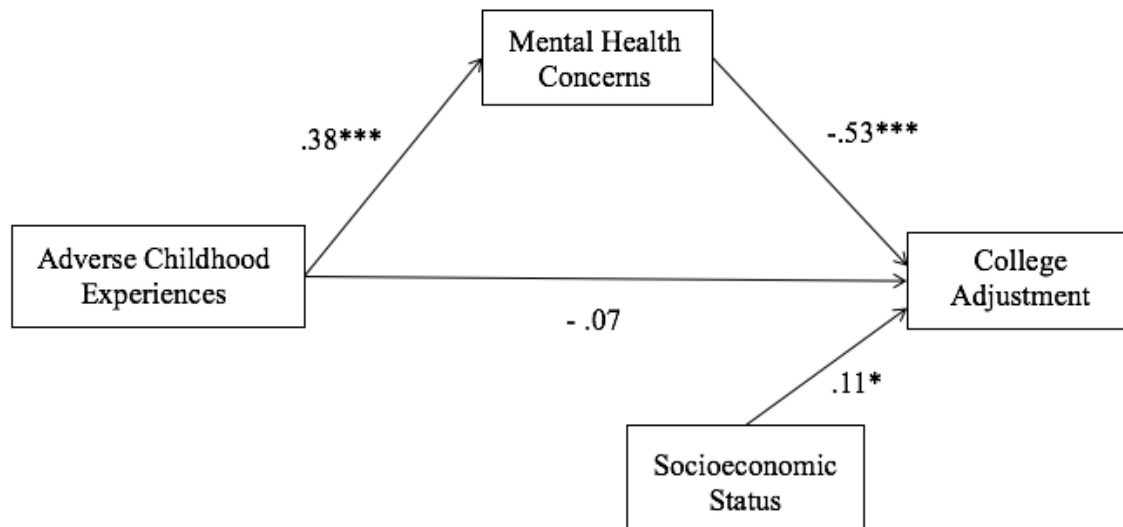


Figure 2. Path model of direct and indirect relations of variables of interest predicting college adjustment. Values reflect standardized coefficients. $*p < 0.05$, $***p < .001$

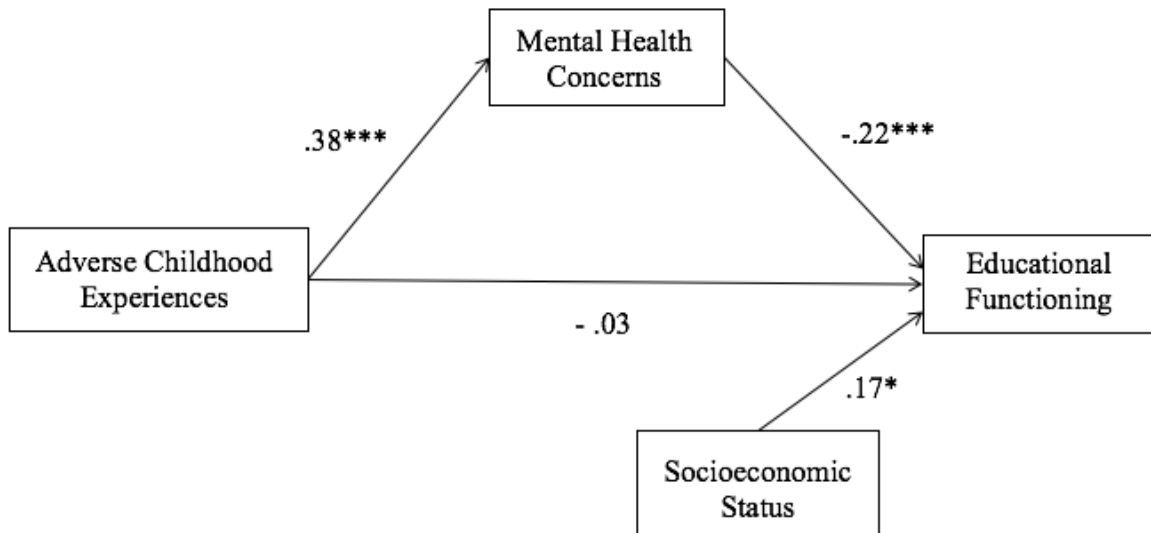


Figure 3. Path model of direct and indirect relations of variables of interest predicting educational functioning. Values reflect standardized coefficients. $*p < 0.05$, $***p < .001$

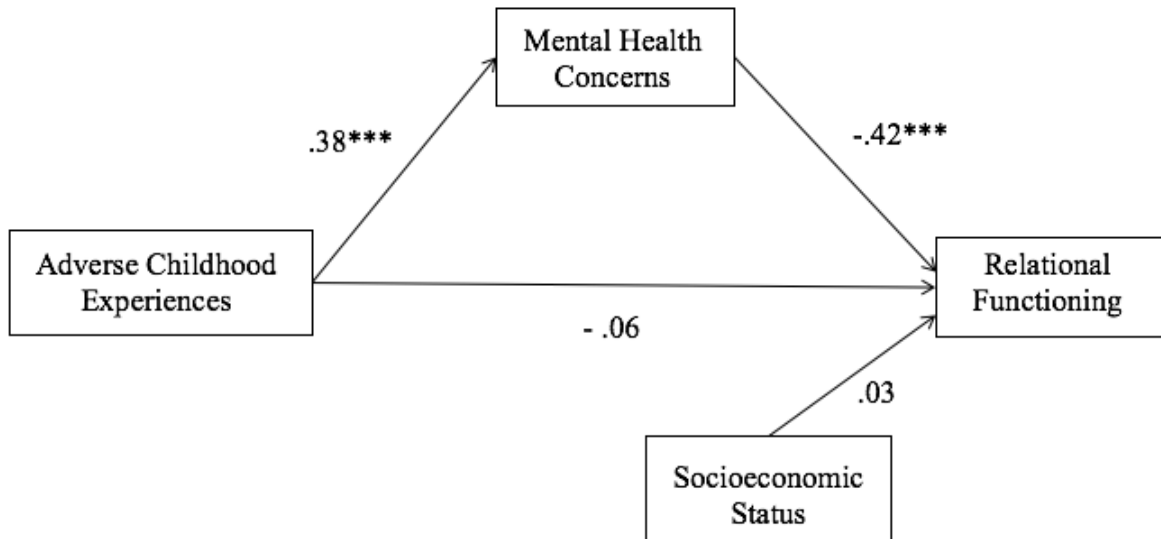


Figure 4. Path model of direct and indirect relations of variables of interest predicting relational functioning. Values reflect standardized coefficients. *** $p < .001$

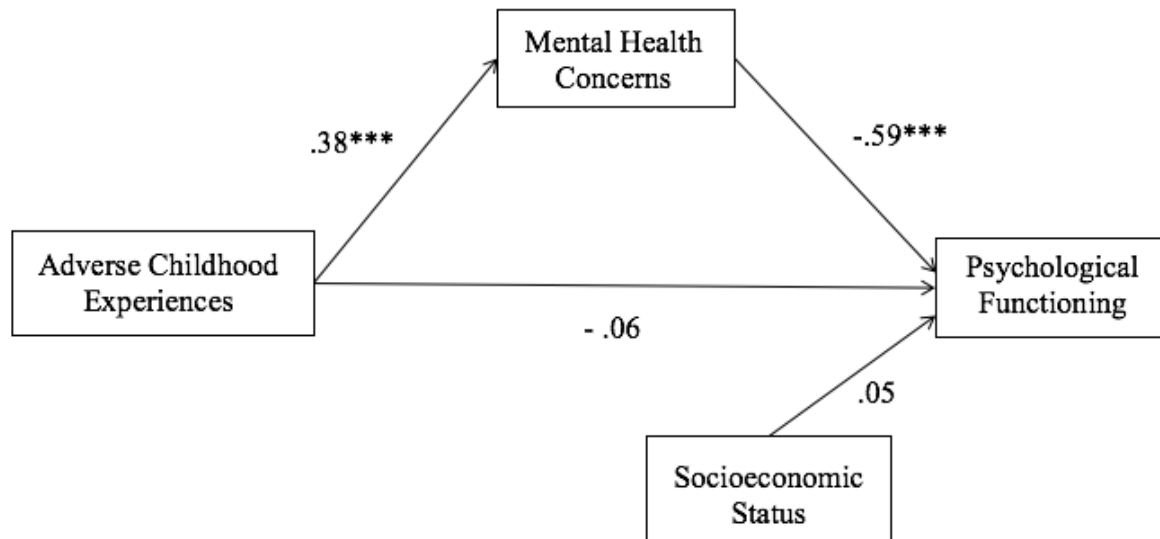


Figure 5. Path model of direct and indirect relations of variables of interest predicting psychological functioning. Values reflect standardized coefficients. *** $p < .001$

Vita

Pamela Rosecrance was born in San Francisco, California, to the parents of John and Jennifer Rosecrance. She has two younger sisters, Jenelle and Katherine. At the age of 13 her family moved from Coralville, Iowa to Fort Collins, Colorado, where she attended Webber Junior High School and Rocky Mountain High School. She completed her bachelor's degree in Business Administration with a concentration in Management and certificate in Human Resource Management from Colorado State University. Soon after graduation, Pamela moved to San Diego, California, to work for an international social justice non-profit organization. After two years in San Diego, Pamela moved to Berkeley, California to work for the University of California, Berkeley, while also pursuing a post-baccalaureate certificate in Psychology and Counseling and volunteering as a research assistant in the Psychology Department.

Pamela began her graduate work at the University of Tennessee, Knoxville in 2016, working under the mentorship of Dr. Erin Hardin in pursuit of a Ph.D. in Counseling Psychology. Through this program, she has been involved in coursework, clinical field placements, a social justice practicum project, and mentorship of undergraduate students through the ASPIRE scholarship program. Pamela is slated to graduate from the University of Tennessee in August 2022, after completing her predoctoral clinical internship at the Bay Pines Veterans Affairs Healthcare System in Bay Pines, Florida this coming academic year.