ADVERSE CHILDHOOD EXPERIENCES (ACES) AND TOXIC STRESS AMONG COLLEGE STUDENTS: PREVALENCE, RISKS, AND ACADEMIC SUCCESS

By

CYNTIA LEE MACKAY-NEORR

A dissertation submitted in partial fulfillment of the requirements for the degree of DOCTOR OF EDUCATION

WASHINGTON STATE UNIVERSITY
Department of Educational Leadership, Sports Studies, and Educational/Counseling Psychology

JULY 2019

© Copyright by CYNTIA LEE MACKAY-NEORR, 2019
All Rights Reserved
To the Faculty of Washington State University:

The members of the Committee appointed to examine the dissertation of CYNTTHIA LEE MACKAY-NEORR find it satisfactory and recommend that it be accepted.

________________________________________
Sharon Kruse, Ph.D., Chair

________________________________________
Xyanthe Neider, Ph.D.

________________________________________
Chad Gotch, Ph.D.
ACKNOWLEDGMENT

There are many people who made this opportunity possible for me, the journey worthwhile, and my success would not have been possible without their support. My deepest appreciation goes first to my dissertation committee.

I would like to extend my sincere gratitude to my committee chair, Dr. Sharon Kruse, for her wisdom, practical suggestions, and patience that cannot be underestimated. Thank you for your understanding through adverse circumstances and not giving up on me when the outlook was discouraging.

I cannot begin to express my thanks to Dr. Xyan Neider, who offered unparalleled encouragement, mentorship, and friendship. I have greatly benefited from your extensive cultural wealth and generous sharing of your own journey on how best to navigate writing a dissertation as a first-generation student and mother. Without your nurturing guidance, this project would not have materialized.

I am extremely grateful to Dr. Chad Gotch, for his invaluable guidance and helpful advice. Your quantitative methods expertise was instrumental in the completion of my dissertation.

I must also thank Drs. Xyan Neider and William Davis for permission to use their study’s archival data set. This opportunity was a perfect match for a study embracing both higher education and public health, and came at exactly the right time to successfully complete my project.

Special thanks to Dr. Kelly Ward for insisting that women should not have to choose between her leadership career and her family. Her confidence and profound belief in my abilities has left an impression and will be remembered always.
I gratefully acknowledge Jim Gordon, MD, and the Center for Mind Body Medicine, for opening my eyes and my heart to the vital role of mindfulness and meditation in stress management, focus and productivity, as well as self-healing and becoming “unstuck” (Gordon, 2008).

I would like to recognize my colleague and friend, Marie Boisvert, who not only survived classes and summer institutes with me, but shared the transformational journey of writing a dissertation by truly understanding the unequivocal challenges and rigor of this process.

I am deeply indebted to my family, especially my mother, father, and sister, who often times might not have understood what I was doing, yet always supported and rooted for me the best ways they knew how. I am particularly grateful to my parents for their generosity and willingness to always help. To my sister, thank you for your compassion, for listening, and believing in me unconditionally. Your encouragement renewed my self-confidence and empowered me to reach my goal.

Thanks must also go to my friends, my fiercest advocates, who not only offered inspiration and enthusiastic encouragement, but waited patiently for me on the other end of the purposeful social isolation that was necessary to finish my dissertation. Your unwavering support and reassurance meant the world to me!

Finally, my heartfelt appreciation goes to my children, Corbin and Tyler, for being my biggest fans, my beacon of hope, for having faith in me, getting their own snacks, and occupying themselves as Mom wrote. You never failed to be on my team, especially when it meant earning some extra screen time while I was writing!
Mental health has become a national health crisis, with suicide as the second leading cause of death for 10 to 34-year-olds. One in five college students experience anxiety or depression, to the extent that it is hard for them to function. Compounding the effects of college-related stress, student exposure to childhood adversity has been associated with anxiety, depression and PTSD. ACEs refer to childhood abuse, neglect, and household dysfunction. The landmark ACEs study found significant links between childhood trauma and risk for chronic disease, social, and emotional problems in adulthood. Individuals with three or more ACEs have an increased risk of negative health outcomes. ACEs are also a global public health issue, with over 275 million children worldwide experiencing some form of violence in the home. Nationally, over half of the population has experienced at least one ACE, and 25% report two or more.

ACEs, toxic stress, and poor health outcomes are particularly problematic for college students, considering stress-related (mal)adaptive coping strategies that negatively impact students before and during college. The purpose of this study was to understand and describe the characteristics and prevalence of college students most at risk for high ACEs and determine the
association between college student ACEs and academic success. A quantitative correlational survey design was used to determine the relationship between ACEs scores and first-generation status among college students. ACEs scores and demographic data were used to determine prediction values for GPA. Archival data consisted of online student survey responses ($N = 1,197$) collected from an exploratory study investigating the relationship between ACEs and methods for which college students navigate stress. The instrument included four separate adapted surveys, including participant demographics, and was administered over three terms.

Findings demonstrated 59% of students reported at least one ACE, 38% experienced two or more ACEs, and high ACEs totaled 22%. Mann-Whitney U results indicated higher ACEs among first-generation students as compared to multigenerational students. Multiple regression significantly predicted lower GPA for students identifying as first-generation, male, African American/Black, or multiple race/ethnicity, and students with high ACEs. Evidence-based practice implications and recommendations for future research are discussed.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENT</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiii</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>CHAPTER ONE: INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Introduction to the Chapter</td>
<td>1</td>
</tr>
<tr>
<td>Background of the Study</td>
<td>4</td>
</tr>
<tr>
<td>Purpose</td>
<td>6</td>
</tr>
<tr>
<td>Rationale and Significance of the Study</td>
<td>7</td>
</tr>
<tr>
<td>Research Questions and Hypotheses</td>
<td>9</td>
</tr>
<tr>
<td>Overview of Methodology</td>
<td>10</td>
</tr>
<tr>
<td>Limitations</td>
<td>11</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>12</td>
</tr>
<tr>
<td>Summary</td>
<td>14</td>
</tr>
<tr>
<td>CHAPTER TWO: REVIEW OF THE LITERATURE</td>
<td>15</td>
</tr>
<tr>
<td>Introduction</td>
<td>15</td>
</tr>
<tr>
<td>Cultural Capital as a Theoretical Framework</td>
<td>15</td>
</tr>
<tr>
<td>Diversity and Inequity in Higher Education</td>
<td>20</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Diversity associated barriers and high impact practices</td>
<td>22</td>
</tr>
<tr>
<td>Class and socioeconomic status</td>
<td>29</td>
</tr>
<tr>
<td>First-generation students</td>
<td>34</td>
</tr>
<tr>
<td>Stress</td>
<td>37</td>
</tr>
<tr>
<td>The history of stress</td>
<td>38</td>
</tr>
<tr>
<td>Stress in college students</td>
<td>39</td>
</tr>
<tr>
<td>Stress and academics</td>
<td>42</td>
</tr>
<tr>
<td>Stress and health</td>
<td>44</td>
</tr>
<tr>
<td>Adverse Childhood Experiences</td>
<td>44</td>
</tr>
<tr>
<td>ACEs in college students</td>
<td>46</td>
</tr>
<tr>
<td>ACEs, toxic stress, and trauma</td>
<td>49</td>
</tr>
<tr>
<td>Toxic stress</td>
<td>50</td>
</tr>
<tr>
<td>Post-traumatic stress disorder (PTSD)</td>
<td>52</td>
</tr>
<tr>
<td>PTSD among college students</td>
<td>53</td>
</tr>
<tr>
<td>Summary</td>
<td>54</td>
</tr>
<tr>
<td>CHAPTER THREE: METHODOLOGY</td>
<td>56</td>
</tr>
<tr>
<td>Research Design and Rationale</td>
<td>56</td>
</tr>
<tr>
<td>Context and Access</td>
<td>58</td>
</tr>
<tr>
<td>Role of the Researcher/Positionality</td>
<td>59</td>
</tr>
<tr>
<td>Study Participants</td>
<td>60</td>
</tr>
</tbody>
</table>
Instrumentation.................................................................................................................. 60

Origin of the ACEs questionnaire. .......................................................................................... 61

Current study. .......................................................................................................................... 63

Data Collection Procedures ..................................................................................................... 64

Ethical Considerations.............................................................................................................. 66

Statistical Analysis .................................................................................................................... 67

Race and ethnicity. .................................................................................................................... 67

Parent education. ....................................................................................................................... 68

First-generation status and ACEs. ............................................................................................ 69

Academic performance.............................................................................................................. 69

Summary .................................................................................................................................. 70

CHAPTER FOUR: RESULTS ...................................................................................................... 72

Survey Data and Sample Population ........................................................................................ 73

College Students and ACEs ...................................................................................................... 75

ACEs Among First-Generation Students .................................................................................. 77

Defining first-generation and parent education ....................................................................... 77

Comparing first-generation and multigeneration ..................................................................... 79

Predictions of College Student Academic Success .................................................................. 81

Overall model prediction ........................................................................................................ 82

Variable prediction results ...................................................................................................... 83
Summary .......................................................................................................................... 85

CHAPTER FIVE: DISCUSSION ......................................................................................... 87

Discussion of Major Findings .......................................................................................... 90

Diversity and inequities in higher education .................................................................. 90

ACEs among first-generation students ......................................................................... 91

College student academic success ............................................................................... 92

College students and ACEs ......................................................................................... 95

Theoretical Implications of the Study ............................................................................. 97

Explanation of Unanticipated Findings ......................................................................... 99

Survey development ........................................................................................................ 99

Specific data issues ........................................................................................................ 101

Duplicates ....................................................................................................................... 102

Resiliency ....................................................................................................................... 103

Notes from the researcher ............................................................................................ 104

Implications for Practice and Rationale ......................................................................... 105

Recommendations for Further Research ..................................................................... 109

Conclusion ..................................................................................................................... 112

REFERENCES ............................................................................................................... 114
APPENDIX

A. ACES QUESTIONNAIRE (Felitti et al., 1998) .......................................................... 150

B. COLLEGE STRESSORS AND ACADEMIC SUCCESS SURVEY (Davis & Neider, 2016-2016) ........................................................................................................... 151

C. REGRESSION CHARTS: HISTOGRAM, P-LOT, AND SCATTER PLOT ........156
LIST OF TABLES

Table 1: Demographic Characteristics and ACEs Score Among Sample Population .................74
Table 2: Representation of Sample Population at Participants’ University..........................75
Table 3: Course Enrollment Among Sample Participants .......................................................76
Table 4: ACEs Survey Question Distribution Among Sample Participants .......................77
Table 5: Variance in Parent Educational Level Among Sample Participants .....................79
Table 6: Standardized Regression Coefficients Predicting Academic Performance ............83
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Public Health Outcomes of ACEs (Anda et al., 2004)</td>
<td>3</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Data Collection Timeline</td>
<td>64</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Distribution of ACEs Among Participants</td>
<td>80</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Individual ACEs Score Points Among Participants</td>
<td>81</td>
</tr>
</tbody>
</table>
Dedication

For all the students

who let me listen as they taught me

about their personal hardships, traumas, and

fears, and invited me to become their ally and

advocate as they discovered their purpose,

transformed the course of their life,

and changed their family trees

forever.
CHAPTER ONE: INTRODUCTION

Introduction to the Chapter

Mental health has become a national health crisis. Suicide has become the second leading cause of death for 10 to 34-year-olds (Centers for Disease Control and Prevention [CDC], 2016), including the age ranges for young adults and college students. Among college aged students, and concurrent with the increasing enrollment of underrepresented groups, including women, African-American, Latina/o Americans, Asian Americans, American Indians, nontraditional, and first-generation students (Choy, 2001; Engle & Tinto, 2008), mental health problems in higher education are also on the rise (Beiter et al., 2015; Kitzrow, 2003; Kruisselbrink Flatt, 2013; Watkins, Hunt, & Eisenberg 2012; Zivin, Eisenberg, Gollust, & Golberstein, 2009). College students are vulnerable to various types of stressors that may negatively influence their psychological well-being (Klainin-Yobas et al., 2016). One in five college students experience anxiety or depression (Center for Collegiate Mental Health [CCMH], 2017). The American College Health Association (ACHA) reported that in the spring 2017, approximately 40% of college students said they had felt so depressed it was hard to function and 61% had stated feeling “overwhelming anxiety” (American College Health Association [ACHA], 2017). Additionally, college student exposure to adverse childhood experiences have been associated with anxiety and depression (Wright, Crawford, & Del Castillo, 2009).

Adverse childhood experiences, or commonly represented as ACEs, refers to childhood trauma including abuse, neglect, and household dysfunction (Felitti et al., 1998). A large-scale public health study (\(N = 17,337\)), conducted by the Centers for Disease Control (CDC) and Kaiser Permanente, discovered significant links between childhood trauma and risk for adult onset of chronic disease, including but not limited to heart disease, lung cancer, and diabetes, as
well as social and emotional problems such as depression, violence, suicide, becoming violent and becoming a victim of violence. As a person’s ACE score increased, so did their risk of disease, social, and emotional problems.

ACEs are not only recognized as a national public health concern, as well over half of the U.S. population has experienced them (Felitti et al., 1998), but as a global public health issue. The United Nations estimates that over 275 million children world-wide experience some form of violence in the home (Anda, Butchart, Felitti, & Brown, 2010; United Nations International Children's Emergency Fund [UNICEF], 2006). People typically experience more than one type of adversity, demonstrated by original study results of more than half of participants reporting at least one ACE, and one-fourth of participants reporting two or more ACEs (Felitti et al., 1998). Similarly, Anda et al. (2006) estimated the national prevalence of ACE scores of three or more to be approximately 22%. Margolin and Vickerman (2007) reported that 30% of U.S. children experience complex trauma, with a median age onset of 5 years of age (Spinazzola et al., 2003). Nationally, the economic burden of ACEs is estimated at $1 trillion (White Paper Steering Committee, 2013). Despite stereotypes about poor health being linked strictly to minority and low-income populations, ACEs are common even among employed, White, middle-class, college-educated individuals with health insurance (Felitti et al., 1998). The public health effects of ACEs over one’s lifetime are depicted in Figure 1.
While the associations between both trauma and stress as well as stress and health are well documented, adverse childhood experiences and early toxic stress have motivated scholars to explore epidemiological risk models to explain negative lifelong health outcomes, through the idea of an “accumulation of risk” (Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003). Allostatic load is another way to discuss what occurs to an individual with chronic states of stress, and is defined as “the cost of chronic exposure to elevated or fluctuating endocrine or neural responses resulting from chronic or repeated challenges that the individual experiences as stressful” (Kudielka & Kirschbaum, 2001; McEwen & Stellar, 1993). Together, with the sequelae, or lasting effects of ACEs, that Felitti et al. (1998) describe, this accumulation of stress is particularly problematic for college students, considering the various sources of stress and
adaptive coping strategies that may negatively affect or “cost” students before, during, and long after their higher education experience.

This research study was conceptualized with consideration to the researcher’s professional experiences and personal challenges balancing work, graduate school as a first-generation student, and family life. With the researcher’s background in health education, higher education administration, and social justice-based work with diverse communities, it was fitting to embrace a study dedicated to public mental health concerns as well as college student success and well-being. This study stemmed from a larger research investigation focusing on Adverse Childhood Experiences (ACEs) and academic stress in college students (Neider, 2018).

This first chapter provides a background and rationale of the study, describes the purpose, and highlights professional significance. Research questions and hypotheses are offered, followed by an overview of the methodology, the study limitations, as well as the operational terms. Finally, the first chapter concludes with the organization of this document.

**Background of the Study**

Researchers suggest that the increasing mental health crisis is associated with childhood trauma (Felitti et al., 1998; Lang, Campbell, & Vanderploeg, 2015). Children are especially vulnerable to violence, trauma, and chronic stress as their brain is still developing. In the presence of trauma, the brain withdraws to the lower brain stem to function in fight, flight, or freeze, instead of freely, or safely, being able to develop the cerebral cortex and higher brain functions that are essential for learning (Karr-Morse & Wiley, 2012; Ramiro, Madrid, & Brown, 2010; Sapolsky, 2018).

ACEs are defined by 10 categories of events that may occur during an individual’s childhood (see Appendix A). Of these 10 categories, five directly affect a child: sexual abuse,
recurrent emotional abuse, emotional neglect, physical neglect, and recurrent physical abuse. The other five ACE categories refer to concerns in the primary childhood residence and environment and indirectly affect a child through parents or caregivers. These experiences include substance abuse, incarceration, interpersonal violence, chronic depression, suicidality, mental illness and/or institutionalization, death, absence of a parent, and/or divorce (Felitti, 2002). These complex traumas are defined by both chronicity, or cumulative nature of adversity, and unpredictability. Instead of a single traumatic exposure, these ACEs refer to multiple traumas, experienced over time, occur within the home, and often by primary caregivers (Dong et al., 2004). Instead of predictable, stable, and nurturing interactions from primary caregivers, children receive unpredictable experiences, alerting their fight, flight, or freeze responses, leading to chronic states of hyperarousal, vigilance, and fear (Karr-Morse & Wiley, 2012).

Blodgett (2013) describes complex trauma in the following way:

  Complex trauma refers to both exposure to multiple persisting adverse experience and the persisting effects of physiological, psychological, and relationship adaptations as individuals cope with adversity. A hallmark of complex trauma is exposure to adversity often very early in life with resulting risks to optimal development (p.15).

Teicher et al. (2003) also evaluated the effects of ACEs and concluded that exposure to adversity in childhood led to significant differences in brain development, including the hippocampus, amygdala, and cerebellum. The authors hypothesized that excessive stress was so toxic that it interfered with normal brain development, and the resulting structural brain differences may be related to mental health disorders including schizophrenia, depression, and ADHD, as well as learning disabilities. Additionally, they determined that the brain differences were attributable to adaptive developmental pathways allowing an individual to adapt to a
prolonged period or lifetime of stress. As a result of these individuals developing the ability to function in highly stressful environments, capabilities for thriving in less stressful situations was diminished (Teicher et al., 2003).

It is known that stress and poor health outcomes are more likely to affect those with higher ACEs scores (Anda et al., 1999, 2006; Anda, Brown, Felitti, Dube, & Giles, 2008; Felitti et al., 1998, 2004; Karatekin, 2018; Lang et al., 2015). Individuals with three or more ACEs scores are at an increased risk for mental health problems, substance abuse issues, chronic disease such as obesity and heart disease (Felitti et al., 1998) and significantly more likely to have not completed high school, and live in poverty (Metzler, Merrick, Klevens, Ports, & Ford, 2017; Sapolsky, 2018). Early sexual experiences and becoming a teen parent is more prevalent for individuals with four or more ACEs (Felitti & Anda, 2010).

**Purpose**

Due to the susceptible nature of students to experience stress as they navigate their way through higher education, the increasing enrollment of college students that are underrepresented, nontraditional, and first-generation, as well as the alarming evidence-based connections between toxic stress, trauma, and long-term health outcomes (Anda et al., 1999, 2006; Anda et al., 2008; Felitti et al., 1998, 2004; Karatekin, 2018; Lang et al., 2015), it was necessary to explore how exposure to childhood adversity impacted college student performance. The purpose of this study was to understand and describe the characteristics and prevalence of the college students most at risk for high ACEs scores, as well as determine the association between college student ACEs and academic performance.
Rationale and Significance of the Study

With the high rates of ACEs in the general population and the increasing evidence of long-term and negative health effects (Felitti et al., 1998), often the result of adaptive and risky coping behaviors, there is increasing concern for the success of college students that have this type of exposure. Often, the resulting sequelae of substance abuse, mental health disorders, teenage parenthood, and accumulation of stress has both direct and indirect influences on college academic success.

In addition to the effects of past trauma, college students are susceptible to stress simply due to the transitional nature of higher education (Taylor, Doane, & Eisenberg, 2014), and even more so for first-generation students (Atherton, 2014). High stress levels are believed to impact college student physical and mental health, as well as academic performance (Lee, Olson, Locke, Michelson, & Odes, 2009; Misra, McKean, West, & Russo, 2000; Towbes & Cohen, 1996). Approximately 21% of college students have been treated for mental health concerns within the past 12 months, and during that same time period, 48% reported a traumatic event co-occurring (ACHA, 2013). Additionally, there are now differences in previous university counseling center utilization compared to more current causes of counseling services (Beiter et al., 2015; Kitzrow, 2003; Kruisselbrink Flatt, 2013; Watkins et al, 2012; Zivin, et al., 2009). Previously, university counseling center utilization needs focused on college transition, student development, and prevention issues (Kitzrow, 2003), whereas more recent counseling center visits encompass issues such as crisis management, long-term treatment, substance abuse and addiction, as well as suicide (Watkins et al., 2012). Early adulthood is a period of development that has considerable consequences for life long health outcomes that are adopted during this time. It is clear that the mental health needs of today’s college student are in transition, more severe, and varied.
Results from this study demonstrated important implications for interdisciplinary practice, intervention, and prevention work and is discussed more comprehensively in Chapter Five. Empirically, study findings generated useful contributions to the limited, yet growing, body of literature pertaining to ACEs in higher education, as well as a more thorough understanding of the prevalence and risks for college students with exposure to adversity in childhood. Additionally, this research yielded valuable outcomes to better assist and inform the efforts of the larger exploratory study investigating ACEs and the strategies for which college students navigate stress (Neider, 2018).

With increased knowledge and understanding of the characteristics and prevalence of the college students most at risk for high ACEs scores, as well as the relationship between college student ACEs and academic performance, research discoveries can better serve practitioners in both higher education and public health. Through a better understanding of the prevalence and risk factors, results produced information suggestive of screening, intervention, as well as prevention and education efforts. A more comprehensive awareness of how college students are affected by ACEs enables higher education leaders, administrators, and student support services to more aptly serve and support the needs of diverse current and incoming college students. Results also prove beneficial for the purposes of university student affairs training and professional development.

Universities have a unique position to support the prevention efforts of ACEs that are so crucial in the field of public health. College is a time of knowledge acquisition, transition, and growth, therefore supporting the awareness and education of ACEs increases the capacity to better serve college students. With the increase in first-generation students seeking higher education, college may be a fitting locale to change, not only the career trajectory of an
individual, but the health outcomes of an entire family, and future generations to come. In the words of Hurtado, “we must do the research that we believe will advance the role of higher education in promoting social progress and we must teach these values to our students” (2007, p.194).

**Research Questions and Hypotheses**

The following questions will guide this study:

**RQ1.** What is the difference in Adverse Childhood Experiences (ACES) scores between first-generation and multigenerational university students?

*H1.* A statistically significant difference exists between ACES scores of first-generation and multigenerational university students.

*H10.* A statistically significant difference does not exist between ACES scores of first-generation and multigenerational university students.

**RQ2.** How well do ACES scores and student demographics, including race/ethnicity, gender, and first-generation status, predict student academic performance*?

*H2.* Interactions between ACES scores and student demographics, including race/ethnicity, gender, and first-generation status, statistically predict student academic performance. *

*H20.* Interactions between ACES scores and student demographics, including race/ethnicity, gender, and first-generation status, do not statistically predict student academic performance. *

*measured by student cumulative GPA.
Overview of Methodology

This study drew from existing exploratory data, initially designed to assess the impact of ACEs on academic success in college students (Neider, 2018). Research on ACEs has been predominately limited to the health and medical fields. ACEs are a rather new construct for higher education and it was necessary to understand the characteristics, prevalence, and influences of ACEs on college level students.

A quantitative non-experimental descriptive and correlational survey design was employed to determine the relationship between ACEs scores and first-generation status as demonstrated by diverse undergraduate students at a four-year university. Additionally, ACEs scores as well as self-reported demographic data (including race/ethnicity, gender, and first-generation status) were used to determine prediction values for academic success.

Archival data originated from undergraduate college student online survey responses \( N = 1,197 \) collected from a larger exploratory study investigating the relationship between ACEs, demographics, and the methods for which college students navigate stress (Neider, 2018). The survey was administered over the course of three terms during years 2015 to 2016 at a diverse, four-year, research extensive university campus, with 24,470 undergraduates enrolled. The survey instrument was an online compilation of four separate adapted surveys, including demographic data of the participants (see Appendix B). The adapted survey also included three reflective questions, however, for the purposes of this study, the qualitative results were not applied.

Descriptive statistics were used to analyze demographic survey data. Categorical data set responses were counted and reported as percentages. The Mann-Whitney U test (Mann & Whitney, 1947) was used to determine significance between ACEs scores and first-generation
students as compared to multigenerational students. Non-parametric multiple regression (Aldrich, 2005; Fisher, 1922, 1925) was utilized to test for statistical significance and analyze prediction outcomes for academic success, as determined by cumulative GPA. A more comprehensive description of the methodological processes employed is further discussed in Chapter Three.

Limitations

Limitations of this study included the locale of the convenience sample. The university campus was located in a rural area in the Pacific Northwest and study results may be specific to this region and its inhabitants. Implications for more urban areas and metropolises were not able to be postulated. Additionally, the convenience sample included students in a higher education setting, a setting recognized for demanding course and study schedules as well as academic and professional rigor. Participants may have lacked time or interest in completing the survey instrument. Some results are based on self-reported participant information and a knowledge for terms used was necessary (e.g. first-generation, parental education level). Also, potentially limiting were survey questions themselves. For example, the question pertaining to parent education level included options for either “Mom” or “Dad.” If a participant spent their childhood in custody of a guardian other than “Mom” or “Dad,” survey results may not have been comprehensively accurate. Next, research procedures included a survey to students at the primary university campus and it may be likely that student demographic attributes and university qualities differ from students enrolled at urban branch campus settings. Results are specific to the single campus location and are not applicable to the university system-wide.

Also limiting was that ACEs research is retrospective in nature, with a risk for participant recall bias (Scott, Smith, & Ellis, 2010) should students not have had an accurate recollection or
knowledge of childhood events. Additionally, bias may have been more likely in students with depressive symptoms. Finally, multiple regression prediction analyses were conducted using the enter method. The results of this type of regression model were only able to reflect the individual variables that were entered, therefore, individually reported variable academic success prediction outcomes may generate sensitivity, especially with regard to the race and gender variables.

Definition of Terms

The following terms were used throughout this study:

- ACEs: Adverse Childhood Experiences
- Disadvantaged: unfavorable circumstances, or deprived of access, support, or opportunities, (e.g. education, finances, social, etc.).
- First-generation: “…students who enrolled in postsecondary education and whose parents do not have any postsecondary education experience” (Redford & Hoyer, 2017). In this study, participants that had parent(s) with a two-year degree did not identify themselves as first-generation, therefore, analyses were conducted with the position that First-Generation referred to student participants whose parent(s) had no college degree. (e.g. for this study, participants that had parents with an Associate’s or other two-year degree were considered Multigenerational). Chapter Four presents a more thorough discussion of first-generation status as it pertains to this study.
- GPA: Cumulative Grade Point Average
- High ACEs Score: three or more ACEs. Following the concerns and logic of Blodgett (2012), and university responsibilities as mandatory reporters, the ACEs questionnaire was modified from 10 to nine questions for the purposes of this study.
(Neider, 2018). The original ACE study (Felitti et al., 1998) described high ACEs as a score of four or more, however with the survey adaptation in this study, three or more ACEs was used to define high ACEs.

- Nontraditional: Nontraditional student characteristics often include adult students, 25 years of age or older, working full-time, with dependents to support, as well as attending college part-time, possibly in preparation for a second career (Forbus, Newbold, & Mehta, 2011; Ramsey, Thompson, & Brathwaite, 1994).
- Sequelea: Conditions, consequences, or lasting effects resulting from ACEs.
- SES: Socioeconomic status.
- Social/Cultural Capital: a non-monetary inheritance of human capital comprising of wisdom, advice, and support, that is shared with children to better prepare them for college achievement and career success (Kim & Schneider, 2005; Perna & Titus, 2005).
- Student Success: A 2.0 grade point average or better in a course and/or a 2.0 cumulative grade point average. Student success also refers to retention in future term enrollment and/or completion of projected degree.
- Traditional: Refers to college students, aged 18-22 years old, who attend college directly out of high school, attend full-time, live on campus, and have minimal major work or life responsibilities (NCES, 2002; Pascarella & Terenzini, 2005; Terenzini & Pascarella, 1998).
- Underrepresented: With regard to demographic variance in nontraditional students (and related differences in needed support and resources), these students are considered to be disadvantaged or underrepresented (Newbold, Mehta, & Forbus,
Underrepresented populations include women, African-American, Latina/o Americans, American Indians, nontraditional, and first-generation students (Choy, 2001; Engle & Tinto, 2008).

Summary

This study sought to understand and describe the characteristics and prevalence of the college students most at risk for high ACEs scores, as well as determine the association between college student ACEs and academic performance. Chapter One of this study addressed the mental health crisis that is increasing in the United States, the high stress levels that affect college students, and the combined concern for the connections between adverse childhood experiences, toxic stress, academic success, and long-term physical and mental health risks for college students. Chapter Two reviews relevant literature regarding diversity, stress, and ACEs, including how each of these topics is applicable to higher education and influence student success and well-being. Chapter Three provides the quantitative research methodology for the study as well as the context of the research, how participants were selected, survey instruments were designed, data was collected, and the statistical approaches for investigation. Chapter Four describes the study findings, including the relationship between ACEs scores and first-generation status. Prediction analysis outcomes for student academic performance, constructed using ACES scores and student demographics, is comprehensively discussed. Chapter Five includes an evaluation of key study findings and research interpretations, as well as a discussion on how outcomes fit within the context of the existing body of knowledge. Evidence-based implications for increased ACEs awareness and student support services in higher education is made as well as unexpected study findings and recommendations for future research.
CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

In order to gain a thorough understanding of the Adverse Childhood Experiences that affect university students, it was necessary to understand the increasing student diversity in higher education, specific concerns for first-generation students, and the stressors that college students may face. The literature review begins by presenting cultural capital as the theoretical framework for understanding and examining this work. The review continues with an overview of student diversity and persistent social inequities in higher education, including diversity related barriers and high impact practices, class and socioeconomic status, as well as first-generation college students. Next, the term stress is defined and explored, including an overview of the history of stress research, the distinctions between types of stress, and then followed by an assessment of stress as it relates to college student success. Lastly, an evaluation of research as it pertains to ACEs is examined, including a more targeted review of ACEs, toxic stress, and PTSD in college student populations.

Cultural Capital as a Theoretical Framework

The term cultural capital used by Bourdieu and Passeron (1977) is defined by McLaren (1994) as being the general cultural background, knowledge, disposition, and skills that are passed on from one generation to another. Cultural capital represents “ways of talking, acting, and socializing, as well as language practices, values, and types of dress and behavior” (McLaren 1994, p. 219). Bourdieu (1977, 1990, 1994) describes cultural capital as a concept to explain how individuals can relate, navigate, and be members of socially structured opportunities, with hopes of reproducing the existing social structure. Cultural capital will be used throughout this document as a theoretical framework for analyzing diversity and high impact practices.
throughout higher education, as well as provide the context for discussing health disparities, toxic stress, and childhood adversities.

Social or cultural capital often represents the specialized or insider knowledge which is not taught in school, and its members consist of contacts or networks that can be used for personal or professional gain (Horvat, 2000; Walpole, 2003). Capital does not refer to monetary or material assets, but are instead, more social, cultural, or symbolic in nature (Bourdieu, 1986). This type of capital can be accumulated and transferred from one arena to another, or from one network member to another. Central to upper class societal power, cultural capital “provides the means for a non-economic form of domination and hierarchy, as classes distinguish themselves through taste” (Gaventa, 2003, p. 6).

Some scholars legitimize cultural capital as an effective method for upward mobility (DiMaggio & Mohr, 1985; Zweigenhaft, 1993). These scholars believe that acquiring cultural capital will grant access and membership into the upper class. In the quest for social mobility, Walpole (2003) argues that harnessing a Bourdieuan framework to select and attend college may be one possible strategy for obtaining economic, social and cultural capital, leading to positive future outcomes. It is perhaps the shift away from monetary or material capital to cultural and societal forms of capital that both masks and perpetuates inequality.

Cultural capital is rooted in deficit model thinking (Lesko, 2001) revolving around the concept of what it means to have power, use power, and acquire power (Kumashiro, 2002; Stolte, 1994). The concept is idealistic in that individuals that have a “shortage” of this capital can and must work to achieve this cultural capital. Historically, literature defined social and cultural capital as well as investigated ways to “empower” those without strategies for accessing or earning this status. Perhaps the more humanistic way of approaching cultural capital is to
look at what it is, who defined it, and argue why it is both unattainable and unrealistic in a time
where institutions are striving for increased diversity and culturally relevant climates.
Simplistically, the ideal of striving for increased cultural capital is analogous to striving to be a
White, heterosexual, affluent, well-educated, able bodied, and normative male. The belief that a
person or community of people can never attain equality in power or cultural capital without first
conforming to the normative ideal is accepting of a deliberate gap in power difference. This idea
of cultural capital is a privileged way of approaching what it means to be successful or have
influence. Most cannot ever achieve those characteristics and in a socially just, culturally
inclusive society, would not even want to attain this ideal.

In their research pertaining to student development based on race and oppression, Helms
and Cook (1999) established that student development is crucial as society often inadvertently
rewards or punishes members of marginalized groups in accordance with the stereotypes for
which they racially identify. However, the authors reported that the way in which students
identified with their racial association did not necessarily explain their cultural socialization.
Helms and Cook (1999) conveyed that while racial identity may not have shaped how much a
student was socialized in the relevant culture, it rationalized the students’ value of that culture.

to challenge traditional and idealistic concepts of cultural capital by nurturing the value of
cultural wealth in communities of color. Often the strengths of marginalized groups, such as
cultural knowledge, skills, ability, and contacts often go unrecognized or noticed as valuable.
The first of the five tenets of Critical Race Theory include the intercentricity of race and racism,
in that race is central to the way that people explain U.S. culture. This concept assumes that
racism exists and is engrained in our U.S. society and considered a cultural norm (Ladson-
Billings, 1999). For example, McDermott, Raley and Seyer-Ochi (2009) described race as a quality that most people clearly see but may be ignorant or unwilling to understand the oppressive nature that accompanies this uncontrollable difference.

The second tenet of CRT consists of challenging dominant (or White privilege) theory, legal items and movements, and insists that Whites have been the greatest benefactors from the civil rights movement (Ladson-Billings, 1999). The third and fourth tenets include harnessing an agenda of social justice and legitimizing the importance of experiential knowledge through lived experiences. Instead of research-based evidence, racism is typically learned or taught through story telling or narrative. Those who have greater privilege or have not experienced the severity of oppression, may be less likely to believe the concepts of CRT due to lack of understanding or relevance. The final tenet of CRT explores race and racism through an interdisciplinary lens (Solórzano, 1997, 1998).

Within the CRT framework (Solórzano, 1997, 1998), cultural wealth describes the aspirational, navigational, social, linguistic, familial, and resistant forms of capital possessed among communities of color (Yosso, 2005). Aspirational capital represents resiliency and the ability to stay positive and hopeful in times of adversity. Navigational capital describes historically racially hostile environments, but can also refer to environments of stress or discrimination and being able to navigate a way through that environment despite harsh conditions. Social capital is the networks or community of contacts most often discussed within a Bourdieuan context, however social capital in Yosso’s (2005) model does not explicitly represent communities of power or privilege. Instead, social capital within the context of cultural wealth signifies the networks and communities of support and connection for any type of individual. Communication and social skills gained through experiences is characterized in
linguistic capital. Not only does linguistic capital highlight the value for multilingual individuals and communities, but also the learned knowledge and skills through cultural communication techniques (including tone of voice and non-verbal attributes, such as body language). Familial capital affirms the importance of cultural knowledge and skills gained or nurtured in the home, including family history, as well as a sense of self within the context of the family. Finally, resistant capital discusses skills gained through knowledge and experience with discrimination and oppressive climates. This form of capital also describes the knowledge and awareness of the institutional structures of racism and a desire to change current structures.

As institutions and leaders strive for social and racial justice, recognizing the significance of capital or cultural wealth among communities of color becomes essential for culturally inclusive climates and culturally relevant practices. Just as diverse students struggle in higher education institutions modeled with traditional ideologies of cultural capital, individuals may be challenged to navigate, socialize, and find support in an unfamiliar community. It is through the radical acceptance of the cultural wealth significance that communities of color possess, that social justice efforts can advance.

Yosso’s (2005) approach to cultural wealth harnesses strengths, experiences, and learned skills, and respects the diversity of individuals and uniqueness of cultural values. Contrary to Bourdieu’s (1977, 1990, 1994) concepts of conforming to the normative ideal, Yosso’s (2005) approach honors that individuals cannot control the family they are born into or the community they lived in as a child. Bourdieu’s (1977, 1990, 1994) normative ideal is contrary to lived hardship as well as the coping or resilience skills that are gained from adverse experiences. Yosso’s (2005) approach incorporates not only the social capital, but examines the whole person, acquired skills, experiences, and knowledge, regardless of the family or community a person
belonged to as a child. Cultural wealth concepts challenge Bourdieuan and deficit-model thinking that some people are either culturally wealthy or culturally poor. In fact, an individual or community that endures and adapts to adversity, may be considered culturally wealthy using Yosso’s (2005) approach. While the literature on the negative health impacts of ACEs is vast, there is little or no research on the skills and strengths gained from chronic adversity. It is well documented that chronic stress and trauma triggers a fight-flight-or-freeze bio-reaction that can lead to negative health outcomes (Karr-Morse & Wiley, 2012; Ramiro et al., 2010; Sapolsky, 2018). However, those same bio-reactions may also be valuable in situations (or professions) where individuals skilled in rapid response and effective management during harsh conditions or crises are needed.

**Diversity and Inequity in Higher Education**

With an understanding of cultural capital as the theoretical framework, it is necessary to examine the current conditions and recent trends demonstrated throughout higher education to gain a comprehensive understanding of diversity related strengths and challenges. Despite very recent declines in college enrollment attributed to the declining birth rates following the economic downturn in 2008 (Barshay, 2018; Nadworny, 2018), the prior two decades saw a consistent increase in higher education enrollment. Student enrollment increased 21% from the year 1994 to 2004, and then again by 17% between 2004 and 2014 (Redford & Hoyer, 2017). Increases in enrollments are largely due to greater access and expanded recruitment of underrepresented student populations, including African Americans, Latina/o, Asian Americans, nontraditional (Newbold, Mehta, & Forbus, 2010) and first-generation students (Ishitani, 2006; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996).
The number of nontraditional college student enrollments increased from 30% to 50% between 1996 and 2006 (Bye, Pushkar, & Conway, 2007). According to the National Center for Education Statistics, 73% of all students enrolled in higher education, demonstrate some of the traits of nontraditional students (Compton, Cox, & Laanan, 2006). Nontraditional student characteristics often include adult students: 25 years of age or older, working full-time, with dependents to support, as well as attending college part-time, possibly in preparation for a second career (Forbus et al., 2011; Ramsey et al., 1994). Due to the variance in demographics of nontraditional students (and therefore differences in necessary support and resources), these students are considered to be disadvantaged or underrepresented, despite the growing number of enrollments seen throughout higher education (Benseman, Coxon, Anderson, & Anae, 2006; Newbold et al., 2009).

First-generation refers to students that are the first in their family to attend college. The National Center for Education Statistics (NCES, 2017), states that “first-generation college students are students who enrolled in postsecondary education and whose parents do not have any postsecondary education experience.” The first-generation student population in higher education has increased, (Orbe, 2004) with 24% to 34% of college students considered the first in their family to attend postsecondary education (Choy, 2001; Engle & Tinto, 2008; Postsecondary National Policy Institute [PNPI], 2018; Redford & Hoyer, 2017).

While the demographic attributes of underrepresented, nontraditional, and first-generation students are widely documented in research, the unique causes of their stress and/or coping styles are not as readily available. In order to better serve the growing diversity in higher education, and similarly address the concerns for retention (Benseman et al., 2006), it is essential
to understand the variance of student needs and adapt services, resources, retention efforts, and campus climate to equitably accommodate all students.

**Diversity associated barriers and high impact practices.** Historically, minority populations have experienced inequities in accessing educational resources (Cohen & Kisker, 2010; Spring, 2017). By 2030, it is projected that approximately half of the U.S. population will be considered racial minorities (Pike & Kuh, 2006). By 2015, it was estimated that nearly 40% of undergraduate student enrollment in higher education would consist of diverse students, in need of services and supports in order to be successful (Pike & Kuh, 2006).

Due to the socially unequal treatment of racially underrepresented populations in higher education, programs have been developed to assist these individuals to adapting to their educational environment. Instead of changing the students, Richardson and Skinner (1990) proposed that postsecondary institutions themselves needed to transform. They described a common myth that increased diversity in higher education would lead to declines in educational quality. The authors illustrated a contradicting system where admissions requirements were lowered to allow for diverse and minority student access to higher education. The institutions, however, failed to consider adapting support services and access to internal resources for those students, both of which led to increased attrition rates.

Scholars have criticized institutions of higher education for a lack of responsiveness to the growing demands of diversity and evolving shifts in student needs (Aguirre & Martinez, 2002). Universities are often recognized as key settings for the construction of knowledge and historically, the production of racially-related stereotypes and persistent discrimination throughout many fields (Hurtado, Milem, Clayton-Pedersen, & Allen, 1998; Law, 2017). With such an important role in society, these scholars argue that universities need to recognize their
role and responsibility in the transformation and socialization of evolving diverse cultural norms. Despite evidence regarding the benefits of diverse-conscience practices and student engagement to address the needs of the changing student landscape, higher education institutions and administrators have often neglected to develop progressive policies concerning inclusive campus climates (Hurtado, 1998; Hurtado & DeAngelo, 2012). This neglect has often negatively impacted student development and perpetuated adverse campus climates and tense interactions (Hurtado & DeAngelo, 2012). Research addressing these issues have existed for a while, however, few institutions have applied these critical concepts with the intention of making meaningful changes to their campus communities (Hurtado et al., 1998).

To illustrate the transforming diversity, the Latina/o population has become one of the largest racial/ethnic multicultural groups in the United States (Solórzano, Villalpando, & Oseguera, 2011). Despite the growth, and together with American Indian students, Latina/o’s have had the weakest educational progress among all multicultural groups and overall lower socioeconomic status. Nationally, Latina/o and American Indian students have the highest high school dropout rates and the lowest percentage of students pursuing and completing college degrees (Musu-Gillette et al., 2016). In 2011, the U.S. Census Bureau reported that 28.4% of American Indians and 25.3% of Hispanics (in 2009 and 2010 respectively) live in poverty. Academic success, college preparation and expectation are also limited, or non-existent, among limited resource students. Lack of cultural competency and faulty stereotypes about language, values and potential to learn for limited resource students serves as a structural barrier to individual student performance and degree attainment (Solórzano et al., 2011).

The Latina/o population has had the lowest graduation rates from two- and four-year institutions, and yet overrepresented at community colleges (Solórzano et al., 2011). These
students experienced barriers obtaining access to higher education as a result of not meeting the admissions requirements at four-year institutions. Therefore, those students attending college, attend community college due to admissions requirements and lower costs. It is necessary for many lower-income and underrepresented students to work full-time, provide for their family and attend school at two-year versus four-year institutions (Solórzano et al., 2011). Research demonstrated that limited resource students were more successful in academic and degree achievement when supported by retention programs, partnerships with community colleges, financial assistance and mentoring programs (Solórzano et al., 2011). Student success is also facilitated with emphases on the maintenance of relationships with family, existing community contacts and application of students’ experiential knowledge to their learning environment. This parallels Stern’s (1997) emphases on the importance of preparing diverse high school youth and offering them “direction and support in any possible way.” His research indicated that, for Hispanic students, it was more than just going to college but offering and supporting a new, improved but different way of life (Stern, 1997).

Racially diverse students who come from limited resource backgrounds have experienced barriers in academic achievement due to the feelings of loneliness, stereotypes from teachers and university personnel, lack of understanding and knowledge among peers regarding cultural competency and concerns about discrimination (Gardner, 2005). Theoharis and Causton (2014) championed a focus on students “belonging” to their environment. They studied the ability of leaders and educators to address inclusivity and integration. While the seven-step process had been viewed as labor intensive by some, their Step 7 to “create a culture of belonging” pointed to a key value and intention of education: learning. A culture of belonging was emphasized in any environment and positively impacts the individual’s “belonging” to that environment. It was the
focus on people and “belonging” where the authors felt diversity, inclusivity, equity and safety, freedom of choice and freedom of voice could be expressed.

For the inequitable gaps in higher education to dissipate, refocused efforts must be made on providing multicultural appropriate resources and student support in addition to an emphasis on eliminating barriers that exist for nontraditional and underrepresented students. As an example, Gurin and Nagda (2006) offered an alternative to traditional teaching methods. They emphasized the importance of intergroup dialogue when working with diverse and nontraditional students. Research demonstrated success due to the opportunity for students to become engaged in exploring differences and similarities with peers and colleagues. Gurin and Nagda stated that it was a way for students to foster a social community in an academic setting.

Minority Serving Institutions (MSIs) and Historically Black Colleges and Universities (HBCUs) have a history of successfully meeting the needs of a diverse student population and promoting inclusive campus climates. As leading examples for effectively supporting diversity and retaining underrepresented students, MSIs and HBCUs serve as models for postsecondary institutions to learn the value and application of high impact diversity practices, resources, and supports to promote engaged and inclusive campus climates.

Baez, Gasman, and Turner (2008) recognized the interconnectedness of MSIs as a model of advocacy for diversity and access in higher education. By acknowledging the purposeful and inclusive practices demonstrated by MSIs, advocates could then begin to work toward narrowing the gap that existed for nontraditional and multicultural students. The authors also exposed the concept that all United States students should have limitless options available to them for postsecondary education, despite the reality that they may not have those options. They
conveyed that social and institutional forces were at work that prevented students from the open access that all U.S. citizens should feel the freedom to benefit from.

Mercer and Stedman (2008) determined that most enrollees at MSIs were students of color, with the largest increased enrollment taking place at Hispanic Serving Institutions (HSIs). The authors pointed out that MSIs provided an important foundation for serving underrepresented and low-income student populations but noted that most MSIs are predominately community colleges or two-year institutions. MSIs and the students that attended those colleges heavily relied on the support of federal funding and financial aid. As an example, the authors described that 45% of low-income students at HBCUs received Pell Grants in contrast to 19% at traditional colleges.

Strayhorn and Hirt (2008) emphasized that MSIs served as the facilitators for social justice and pioneers in educating leaders in higher education to empower students and create change. The authors believed that MSIs historically and presently served as a function to fulfill social justice ideologies in the U.S. higher education system. In their research of current education trends and the ideals of cultural capital as a means for upward mobility, equality and justice, they studied the mission statements at MSIs. Most missions included statements about social justice, equality of opportunity, cultural maintenance, student empowerment and democracy. Recommendations were made for empowering the disempowered students by promoting “hope, possibility, self-esteem and self-worth” through campus cultures and practices that valued diversity.

Bridges, Kinzie, Laird, and Kuh (2008) stated that MSIs served as a role model for other institutions in demonstrating student success and quality education for nontraditional and diverse student populations. With the increase of nontraditional college student populations, the authors
investigated the quality of education for nontraditional students as they attained bachelor’s degrees from MSIs (Bridges, Kinzie, Laird, & Kuh, 2008). The authors found that many students were less likely or unable to take advantage of college support resources due to the challenges they had experienced when first entering college. As compared to traditional colleges, MSIs were better at engaging students and equipping students with resources to overcome personal barriers. MSIs were also found to be more successful than traditional colleges for offering high quality education that was both accessible and affordable, as reported by students who considered their college experiences to be both valuable and meaningful (Bridges et al., 2008).

Stage and Hubbard (2008) investigated faculty attitudes about students and job satisfaction in addition to campus life at MSIs, and determined that faculty were unaware of student demographics and the unique barriers that students faced. The authors suggested that institutional administrators educate faculty regarding student body demographics and the challenges they encountered. Research established that in doing so, faculty became more sensitive to the needs of the students and overall instructional quality improved. As instructional quality improved, student performance and satisfaction also increased. Stage and Hubbard noted that the faculty role in student experiences had not been investigated thoroughly but made recommendations for future research emphasizing the importance of faculty as the point of contact for college students. Despite barriers, underrepresented students have been resolved to be successful in order to build a better future for themselves, their families and their communities.

The importance of higher education as a means for providing the knowledge and skills necessary to live and work in the 21st century was emphasized by Hurtado and DeAngelo (2012)
for all postsecondary institutions. In order to empower students to create and sustain a world that is equitable, democratic, and just, critical thinking and intentional educational practices were needed. Evidence-based, high impact intentional diversity practices that enhanced educational outcomes included integrative and experiential approaches that could build on students’ current views and challenge them to apply new knowledge to address contemporary issues (Hurtado & DeAngelo, 2012).

Intentional practices and community service (Hurtado & DeAngelo, 2012; Pascarella & Terenzini, 2005) have been important factors in successful high impact campus climates but also for civic and globally-minded students. Learning communities and connecting learning through multiple contexts have been important for cultivating underrepresented student success (Fink & Hummel, 2015; Kuh, 2008). Several of these high impact educational practices include strategies such as first-year seminars, writing intensive courses, collaborative projects, undergraduate research, diversity and global learning, service learning and community service, internships, and capstone projects (i.e. undergraduate senior course that applies and integrates learning) (Fink & Hummel, 2015; Harper, 2009; Kuh, 2008). These integrative and experiential learning modalities have also been successful in encouraging underrepresented students to continue learning through professional development and graduate studies (Harper, 2009).

First-year students have a tendency not to ask questions in class, however, after participating in community service in the first year as a part of the class expectations, student skills, behaviors, and confidence were enhanced (Hurtado & DeAngelo, 2012). Positive engagement and authentic learning from faculty in the first year also benefited student academic habits as well as application of classroom concepts for real-world issues.
Hurtado and DeAngelo (2012) reported that students felt most engaged with faculty that valued diversity. Participation with faculty in community service or undergraduate research also yielded positive outcomes for students. Study abroad has been effective as a means for student engagement (Fink & Hummel, 2015; Harper, 2009; Kuh, 2008), but the impact has been greater and more valuable when led by diverse faculty and included the application of scientific skills and thinking for a meaningful purpose (Hurtado & DeAngelo, 2012). While faculty play an important role as an “institutional agent” (p.22), intentional programs and practices are necessary at both the campus and institutional levels.

Mentoring and participation in undergraduate research has led to successful academic outcomes for underrepresented students, and has also encouraged students to pursue interests in science, technology, engineering and math (STEM). In fact, self-confidence and family support of a STEM education and career has motivated more underrepresented students to pursue STEM majors (Jackson, Charleston, Lewis, Gilbert, & Parrish, 2017). Eagan, Sharkness, Hurtado, Mosqueda, and Chang (2011) learned that faculty are more likely to involve undergraduates in their research when backed by government funding. The authors also found that faculty from liberal arts colleges and HBCUs were more likely to mentor undergraduate students. Underrepresented student STEM degree completion and progression into graduate studies was more successful with programs and faculty that tailored their practices to meet individual student needs (Hurtado, Newman, Tran, & Chang, 2010).

**Class and socioeconomic status.** One of the major real and perceived barriers to higher education is money. Without adequate funding, access to college can be more limited or impractical. Individuals that come from families with lower socioeconomic status often do not see college as a viable option, limited by both funds as well as knowledge regarding college
financial supports and resources. According to Walpole (2003) lower SES students are socially accepted as “disadvantaged” but at a time when institutions are striving to make changes to increase diversity and accommodate underrepresented groups, students with low SES have gone largely unrecognized in the strategic planning process for student support services. Research has extensively focused on racial and ethnic group diversity, as well as differences in gender and sexual orientation. However, students with low SES are similarly underrepresented and face many of the same barriers. In fact, they were less likely to attend college and when they did, these students attended less selective colleges. Students with low SES also struggle to persist in higher education and are less likely to attend graduate school.

Using Bourdieu’s (1977, 1990, 1994) models of cultural capital and habitus, Walpole (2003) described students with lower SES holding less cultural capital than students with higher SES. However, successfully completing college did not necessarily increase lower SES students’ cultural capital to a level considered equivalent to their peers. Post-graduation, lower SES students were able to obtain careers and personal profits that were higher than that of their low SES peers that did not attend college, but were still considerably lower by comparison to that of their higher SES college prepared peers. Additionally, while a smaller percentage of low SES students went onto graduate school, as compared to their higher SES counterparts, those that did go and also became active and involved graduate students were able to adopt a more equivalent cultural capital. Lower SES students that attended graduate school and participated in student organizations, activities, and through contact with faculty, obtained a cultural capital status that was comparable to that of their higher SES colleagues. Considerably more effort, education, and time was required of lower SES students to reach an equivalent level of cultural capital.
Noteworthy however, was that research regarding student identity and the influences of social class determined that affluent students described social class as much more important to their identity as did lower-income students (Aries & Seider, 2007). These findings revealed that “stress and limited opportunities that are associated with poverty will inhibit identity exploration.” On self-reports of class, affluent students down-played their reality (e.g. reported upper to middle class status while more accurate status was upper class or wealthy) while lower-income students exaggerated status. Lower-income students were more likely to report middle class when their family income level more closely aligned with that of low-income status (Aries & Seider, 2007).

Lower-income students had ambitions for entry-level and middle-class jobs while affluent students aspired to become higher earning professionals such as doctors and lawyers (Aries & Seider, 2007). The student’s goals resembled how social class is perpetuated generation after generation. Affluent students had parents and grandparents that had attended college and secured better paying jobs, then that of lower-income students, who were predominately first-generation with working class parents (Aries & Seider, 2007).

Affluent students believed they had more opportunities because of their class but lower-income students justified their situation by discussing opportunity as less important that the journey or experiences they had learned from through their hardships (Aries & Seider, 2007). Lower-income students reported that no one had explained the significance of postsecondary education or the need to go to college. Rather, they were told to “grow up and get a job so that [they could] survive.” Social class was found to be unrelated to self-esteem, however, lower class students demonstrated pride in their resourcefulness and independence as compared to students considered to be well-off.
Additionally, affluent students conveyed the desire to be born again into the same social class and to the researchers’ surprise, two-thirds of lower-income students described the same desire (Aries & Seider, 2007). These students stated that they would choose to be born into the same social class again, despite any hardships or challenges they had faced. These students did however report wishing for more money, more opportunities to travel, and better access to education.

Movement differences among and between college students based on social class was examined by Goldrick-Rab (2006). The study compared students that attended college uninterrupted (from start to graduation) to that of those students that started and stopped school, transferred and/or alternated between full-time and part-time student enrollment status. Students with lower SES were more likely to attend college with interruptions in their journey for college degree attainment (Goldrick-Rab, 2006). Findings conveyed that this meant greater difficulty and struggle for lower SES students and a longer duration of time to degree completion.

While examining the effects of college transfer among students of varying levels of SES, Goldrick-Rab and Pfeffer (2009) determined that for lower SES students that originally began college at four-year institutions, it was more common that they transferred to a two-year or community college than those with higher SES. Possible explanations for the transfer included poor academic performance as well as family and work obligations. Alternatively, higher SES students that transferred were more likely to transfer from four-year institutions to alternate four-year institutions. Transfer among higher SES students was unrelated to unsatisfactory academic performance (Goldrick-Rab & Pfeffer, 2009).

In the examination of class differences, inequities in childhood and throughout the transition to adulthood, as well as evaluating college enrollment, degree attainment, financial aid,
work and social life, Aronson (2008) determined that class status impacted degree attainment at every step of the process through college, with notable challenges for low SES and first-generation students. Suggestions for college support programs were made and included evening classes, flexible requirements, childcare and support programs (e.g. tutoring and advising). Aronson proposed the addition of specific programs, such as extracurricular activities, for first-generation students to make adapting to college easier.

In addition to the support needed by lower SES populations, Sapolsky (2018) described the growing consequences for these individuals, worsening health outcomes, and offered potentially important origins. Sapolsky’s Health-Wealth Gap is a strategy for explaining biological impacts on both poverty and inequality. The research highlighted the science behind pre-frontal cortex function. As mentioned previously, this is the part of the brain necessary for learning, cognitive function, planning, and decision making (Karr-Morse & Wiley, 2012; Ramiro et al., 2010). The pre-frontal cortex is also the part of the brain that is impaired by stress hormones. While it is well known that those in poverty may suffer worse health conditions and more amplified illnesses (Nurius, Green, Logan-Greene, Longhi, & Song, 2016), this has predominately been attributed to brain changes leading to poor choices. The poor choices then lead to worsening poverty. However, Sapolsky (2018) postulated the opposite, in that low SES and inequality is first to influence pre-frontal cortex function. This diminished brain function then leads to poor choices, deeper poverty, and worse health. These observations align with ACEs outcomes, such as higher ACEs and increased parenting distress among lower SES populations (Steele et al., 2016), and may affect those first in their family to attend college to a greater extent.
First-generation students. The NCES (2017) states that “first-generation college
students are students who enrolled in postsecondary education and whose parents do not have
any postsecondary education experience.” This description of a first-generation student has
changed slightly in the past twenty years, when the NCES defined first-generation as students
“whose parents’ highest level of education is a high school diploma or less” (Nuñez, & Cuccaro-
Alamin, 1998). The first-generation student population in higher education has increased,
especially in community colleges (Orbe, 2004). In the United States, 24% to 34% of all college
students are considered first-generation and the first in their family to attend postsecondary
education (Choy, 2001; Engle & Tinto, 2008; PNPI, 2018; Redford & Hoyer, 2017).

First-generation students are often students of color, have lower socioeconomic status,
are older and more likely to have dependents than their peers, and have significantly higher rates
of attrition (Choy, 2001; Ishitani, 2006; Pascarella, Pierson, Wolniak, Terenzini, 2004; Pike &
Kuh, 2005; PNPI, 2018; Redford & Hoyer, 2017; Smith, 2013; Terenzini et al., 1996).
Additionally, as compared to their peers, first-generation students are more likely to demonstrate
the following characteristics and behaviors: lower SAT scores, decision to delay college onset,
attend two-year institutions and less selective colleges, enroll at for-profit institutions, attend
college part-time, and borrow money from the federal government (Orbe, 2004; PNPI, 2018;
Redford & Hoyer, 2017). First-generation students demonstrate lower levels of college readiness
(determined by enrollment in remedial courses), lower first-term grades (Orbe, 2004), take
longer to reach degree completion, and are more likely to leave college without a degree (Chen
& Carroll, 2005). Finally, first-generation students also experience difficulty and challenges
when adjusting to college life and as a college student, they tend to exhibit poor participation in
student organizations, and demonstrate less interaction with other students and faculty (Orbe, 2004). Researchers have speculated on why first-generation students may have higher attrition rates, and theories range from the possibility that these students are unable to afford the tuition cost to continue (PNPI, 2018; Redford & Hoyer, 2017), that they are at an increased risk for becoming overwhelmed and stressed (Beiter et al., 2015), and that according to some, first-generation students may lack traditional idealistic social capital (Atherton, 2014; Kim & Schneider, 2005; Perna & Titus, 2005). For many first-generation students, home life and college life are at odds with one another and students have difficulty balancing their two different environments (Orbe, 2004). Many first-generation students, after beginning college, feel like outsiders both at home and at school. Using Orbe’s suggested concept of identity foundation through the combined values of family and friendships, first-generation students may have experienced internal conflicting messages about personal values due to the inability of others to be able to relate to the new experiences of the student. First-generation students struggle to find solace or a sense of community with other first-generation students, and Orbe postulated that a critical component of the identity development in first-generation students was supporting students in the ability to merge the two settings that they experienced (home and college).

While first-generation students bring with them, culturally relevant capital, their lack of traditional, idealistic social capital makes it difficult for them to transition into college (Atherton, 2014). Parents who went to college can offer guidance on how to successfully navigate college admissions, financial aid, college-level coursework, advice on time management, clubs, and university resources (Sy, Fong, Carter, Boehme, & Alpert, 2011). It is believed that parents who attended college are said to have social or cultural capital (Bourdieu, 1977, 1990, 1994), or a
non-monetary inheritance of human capital including wisdom, advice, and support, that is shared with children to better prepare them for college achievement and career success (Kim & Schneider, 2005; Perna & Titus, 2005).

Kreuter and Lezin (2002) discussed social capital as a resource and support that yielded access to resources by simply being a member of the network, access to others within the network or community, for members to facilitate the same objective of enhancing upward mobility and productivity, all built on trust and reciprocity (Kreuter & Lezin, 2002). Simply put, if you are part of the “club,” other members of the club are in the “know” and will help one of their own. Trust refers to the bonds between members that is built on shared informal values or norms, while reciprocity describes an “expectation of a return on one’s investment” (Kreuter & Lezin, 2002). When applied to college attendance, students that have parents with a college education, have access to knowledge and support of postsecondary education that first-generation students have yet to be granted “membership.” Parents with a college education may recognize the value of college and financially support, or “invest” in, their children. Social capital has also been linked to health outcomes with evidence demonstrating that trust and group membership have been significantly associated with overall morbidity (Kawachi, Kennedy, Lochner, & Prothrow-Smith, 1997).

When social capital is discussed with regard to the current 24% to 34% of first-generation college students (Choy, 2001; Engle & Tinto, 2008; PNPI, 2018; Redford & Hoyer, 2017), this means that approximately one-third of United States postsecondary students are transitioning into college without the guidance, support, or social capital advantage from their parents (Engle & Tinto, 2008). It would make sense then, that first-generation students are at a disadvantage as they struggle academically (Engle & Tinto, 2008) and financially, take longer to complete their
degree, are more likely to leave college prior to completion (PNPI, 2018; Redford & Hoyer, 2017), and may be at an increased risk for stress, anxiety, physical and mental health concerns.

**Stress**

The term stress is broad, has many definitions, and its interpretations are innumerable. The word, stress, means different things to different people. The Merriam-Webster (n.d.) dictionary defines stress as a “constraining force or influence” pertaining to a host of many explanations (Merriam-Webster, n.d.). However, when people discuss stress in conversation, they typically describe how they are feeling about a situation or the circumstances happening to them. Students talk about the stress of school and deadlines, parents discuss the stress of raising kids, and professionals worry about upcoming meetings, deadlines, and career goals. The term stress is used regularly but many people may not stop to consider what stress actually is (Baqutayyan, 2015).

Stress is a natural and normal response to the body. In a “systemic” or physiological sense, stress is the body’s way of coping with external factors, or “strain” (Selye, 1956) that affect the way the body is working. Psychologically, stress represents to how a person perceives the pressure of external factors (American Psychological Association [APA], 2018). While systemic stress effects human bodies in a similar fashion, the manner in which a person perceives stress (or stressors) is entirely variable from person to person. While too much stress is not healthy for the body, or normal, the National Institute of Mental Health (U.S. Department of Health and Human Services [HHS], 2016) reports that stress affects all people, not all stress is considered “bad,” chronic stress can cause health problems, but there are many strategies for managing stress (HHS, 2016).
The history of stress. A little more than 80 years ago, a Hungarian physician and researcher by the name of Hans Selye stumbled upon what is now known as “stress” when treating patients with varying ailments yet similarly presented as “sick” to him (American Institute of Stress [AIS], 2017). His observations led him to discover an autonomic hormonal response that he called “General Adaptation Syndrome,” and offered to the medical community in 1936 by way of a publication in Nature (Selye, 1936). In his landmark book titled, The Stress of Life, Selye defined stress as the “sum of all nonspecific changes (within an organism) caused by function of damage” (p.26) and then simplified for easier understanding, stress is “the rate of wear and tear in the body caused by living” (Selye, 1956, p.274). He spent his career attempting to define stress and better understand the effects of stress on the immune system. Selye is commonly known as the “father of stress” for the heuristic launch pad he initiated for researchers that followed (Baqutayan, 2015; Fink, 2016; AIS, 2017).

Lazarus (1996) took a more psychological approach to stress and developed a theory based on the concept that stress occurred as a result of individuals perceiving they could not cope with the demands or pressure being placed on them, or due to threats to their well-being (Lazarus, 1996). In his theory of stress, Lazarus (1993) suggested that there are two mechanisms taking place during stress: appraisal and coping. Lazarus (1993) discussed appraisal as the way an individual perceives the significance of what is happening to them and coping represents the individual’s emotions and actions to manage the demands of the situation. In this way, stress is the relationship between what was occurring in the environment and the perceived or actual strategy for coping with the occurrence. Therefore, Lazarus’s theory of stress describes stress in a way that it is a physiological, behavioral, and subjective reaction to a stimulus or situation (Lazarus, 1993). Each person that encounters a circumstance will perceive it differently and
equally perceive their own ability to cope with it in a differing mannerism and capacity. With regard to appraisal, Lazarus (1991) defined the close relationship between stress and emotion with the distinction of 15 basic emotions that may be present when experiencing stress. Of the 15, nine of the emotions are negative in nature, four are positive and two are variable depending on the individual (Lazarus, 1991). While the emotions that may be present during stress can be defined, the actual emotion that is experienced is dependent on the perception of the individual experiencing the stressful situation.

Folkman and Lazarus (1980) defined coping as “the cognitive and behavioral efforts made to master, tolerate, or reduce external and internal demands and conflicts among them” (p.223). There are two major coping categories: emotion-focused coping and problem-focused coping (Lazarus & Folkman, 1984). Emotion-focused coping refers to the capabilities of managing the emotions that arise during the appraisal process and problem-focused coping denotes an ability to manage or cope with the situation itself. Much of the research that has been documented centralizes on problem-focused coping and management of stressful situations, whereas there are research gaps still present with emotion awareness, knowledge, and management (Folkman, 2010).

**Stress in college students.** College students are utilizing counseling services now more than ever (Beiter et al., 2015; Kitzrow, 2003; Kruisselbrink Flatt, 2013; Watkins et al., 2012; Zivin et al., 2009). In fact, one in five college students experience anxiety or depression (CCMH, 2017) and university counseling center visits increased 30% between 2009 and 2015 (Center for Collegiate Mental Health [CCMH], 2015). The ACHA reported that in the spring 2017, approximately 40% of college students said they had felt so depressed it was hard to function and 61% had stated feeling “overwhelming anxiety” (ACHA, 2017). These numbers
are much higher than that of previous studies reporting 16% and 27% of college students in 1985 and 2002, respectively, feeling “frequently overwhelmed” (Sax, 1997, 2003). Overall, negative and excessive stress for college students has been associated with both diminished academic performance and decreased health outcomes (Shields, 2001; Svenson & Campbell, 1992).

Stressors that contribute to this increase include academic performance, pressure to succeed, college expectations, financial difficulties, interpersonal relationships, coping in a new social environment, and post-graduation plans (Beiter et al., 2015; Brougham, Zail, Mendoza, & Miller, 2009; Hamaideh, 2011). It is well understood that higher education can be both a transitional and stressful time (D’Zurilla & Sheedy, 1991; Kadison & DiGeronimo, 2004; Pierceall & Keim, 2007; Ross, Niebling, & Heckert, 1999; Towbes & Cohen, 1996), and the ACHA (2013) reports that stress is the greatest barrier to student academic achievement. Approximately 75% to 80% of college students are moderately stressed (Pierceall & Keim, 2007), and 52% of students have been reported as experiencing high levels of stress during a typical college term (Hudd et al., 2000). With this evidence, it seems urgent to better understand the stress that university students endure, as well as understand variances in college stress with the growing diversity of the college student population to better support students for future academic success.

Differences in perceived stress levels as well as coping strategies are demonstrated between traditional and nontraditional students as well as between males and females (Brougham et al., 2009; Jones, Mendenhall, & Myers, 2016). Causes of stress demonstrated by traditional college students have been attributed to changes in sleep habits, vacations and breaks, increased workload, changes in eating habits, and new responsibilities. Studies about college student stress in more diverse and multicultural populations demonstrate varied coping strategies (Mena,
Padilla & Maldonado, 1987). While these stressors would likely be challenging for any college student, several studies assessed stressors among students of color specifically. Findings included stress related to both academic and interpersonal influences, such as financial concerns (O’Neal et al., 2016), death of family members, low grades, time management (Forbus et al., 2011; Misra et al., 2000), stress from significant others, and stress associated with missing classes (Negga, Applewhite, & Livingston, 2007).

Struthers, Perry and Menec (2000) found that low course grades were associated with increased academic stress. Differences in students’ ability to cope with new adjustments and college transitions may affect overall stress levels as well (Leong, Bonz, & Zachar, 1997; O’Neal et al., 2016). Problem-focused coping strategies and social support have been suggested as important predictors of college academic stress (Rayle & Chung, 2007; Renk & Smith, 2007). Students with problem-focused stress coping skills are more likely to be motivated for academic success and better adjust to college, than that of students demonstrating emotion-coping strategies (Leong, Bonz, & Zachar, 1997; Shields, 2001; Struthers, Perry & Menec, 2000).

With regard to gender, females are more likely to perceive stress and anxiety more often and with greater intensity than males (Brougham et al., 2009; Campbell, Svenson, & Jarvis, 1992; Misra & McKeen, 2000; Pedersen, 2012; Soderstrom, Dolbier, Leiferman, & Steinhardt, 2000) and research suggests that there are gender differences in the perceived stressors of college and academic endeavors (Jones et al., 2016; Misra & McKeen, 2000). There is a possibly of association with the increased frequency of physical and mental health concerns in females (Almeida & Kessler, 1998). Likewise, coping strategies may differ, including the likelihood that males may avoid emotion-focused or social support strategies for coping with stress and harness problem-focused coping skills as compared to females’ utilization of both emotion-focused and
social support coping (Ptacek, Smith, & Dodge, 1994). However, college students as a whole, tend to utilize emotion-focused coping skills more often for sources of stress (Brougham et al., 2009).

**Stress and academics.** Dill and Henley (1998) looked at student success between traditional and nontraditional students for academics, peer and social relations, family, autonomy and responsibility and intimacy. Findings demonstrated that nontraditional students struggled with more responsibility in the home, ability to enjoy class and doing homework, while traditional students were more likely to worry about their school performance (Dill & Henley, 1998). Statistically significant differences were demonstrated between traditional and nontraditional student perceptions of stressors.

Perceptions of high levels of student stress has been associated with academic commitments, financial pressures, and lack of time management skills (Misra et al., 2000). Similarly, anxiety levels and time management capabilities are significant predictors of academic stress (Misra & McKean, 2000; Renk & Smith, 2007). Time management has been cited as an effective coping strategy for college students (Macan, Shahani, Dipboye, & Phillips, 1990), and females may demonstrate more proficiency with time management (Misra & McKean, 2000). However, for nontraditional college students, time management may be increasingly more problematic and contribute to greater stress levels (Forbus et al., 2011; Kearns & Gardiner, 2007; Negga et al., 2007). Interestingly, comparisons of students’ perceptions of stress and faculty members’ perceptions of student stress are varied (Misra et al., 2000). Faculty perceived student stress to be higher than students perceived their own stress levels, and may be attributed to awareness of worse mental health status in students than is demonstrated for faculty (Hawley et al., 2016).
Writing about stress and stressful events has been demonstrated to be helpful in both reducing acute negative student mood as well as improvement to student GPA (Lumley & Provenzano, 2003). In fact, academic self-efficacy has been found to be a better and more consistent predictor of academic success for nontraditional students, than that of stressors alone (Zajacova, Lynch & Espenshade, 2005). Academic persistence has been associated with direct and indirect effects of stress and student perceptions of campus climate (Johnson, Wasserman, Yildirim & Yonai, 2014; Shields, 2001). Findings indicated that stressors for White students included comfort with peer interactions, stress related to the social environment on campus, feelings about the campus environment, and opportunities for diversity on campus. Alternatively, stressors for students of color included racism on campus, comfort with academic interactions, stress related to the academic environment, and feelings associated with the campus environment (Ancis, Sedlacek, & Mohr, 2000; Johnson et al., 2014). Ancis, Sedlacek, and Mohr (2000) also revealed that African American students, as compared to other students of color, consistently reported significantly increased levels of racial conflict, pressure to conform to stereotypes, and inequitable treatment by faculty, staff, and teaching assistants. In the same study, findings also established that White students’ perceptions demonstrated very little race-related tension and a diversity-rich campus climate.

In some studies, health science students have demonstrated low self-esteem, low student to faculty interaction, increased motivation for achievement, and greater satisfaction with life (Hamaideh & Hamdan-Mansour, 2014). While female students demonstrated increased levels of achievement motivation, they also had increased levels of depression, anxiety, and stress, as compared to males that displayed higher levels of self-esteem (Hamaideh & Hamdan-Mansour, 2014). In these health science students, the best predictors of academic achievement included
personal motivation for achievement, mother’s educational level, working besides studying, gender, aptitude, and depressive symptoms (Hamaideh & Hamdan-Mansour, 2014). Similarly, studies have also revealed negative correlations between stress levels and student perceptions of health as well as the educational level of their mother and father (Hamaideh, 2011).

**Stress and health.** Chronic stress has been found to be a significant predictor of distress (Towbes & Cohen, 1996). Additionally, unhealthy behaviors have been associated with high levels of perceived stress, while a focus on healthy lifestyle behaviors has been linked to decreases in perceived stress (Badger & Morrell, 2016; Doron, Trouillet, Maneveau, Neveu, & Ninot, 2014). Greater stress levels in students have also been connected to lower levels of self-esteem and perceived declines in health status (Hudd et al., 2000).

For Mexican American college students, acculturative stress may be associated with increased levels of anxiety and symptoms of depression (Crockett et al., 2007). In these students, active coping skills were associated with decreased levels of depression, while avoidant coping strategies contributed to higher levels of anxiety and depression (Crockett et al., 2007). This same study found that parental support and active coping skills helped to buffer the negative effects of depression and anxiety (Crockett et al., 2007). In students of color, negative perceptions of campus climate, combined with academic stress, contributed to depression (Arbona & Jimenez, 2014). Generally, college students with a history of depression may also be at an increased risk of greater stress in higher education and may also increase the likelihood for depression recurrence (O’Hara, Armeli, Boynton & Tennen, 2014).

**Adverse Childhood Experiences**

Adverse childhood experiences (ACEs) are known to be connected to poor adult health (Felitti et al., 1998). The original ACE study (Felitti et al., 1998) was conceptualized by the
CDC and Kaiser Permanente to explore the relationship between adult health risk behavior and chronic disease to the exposure of childhood abuse, neglect, and household dysfunction (Felitti et al., 1998). Over 9,500 adults completed a survey asking 10 questions, including psychological, physical, or sexual abuse; violence against their mother; divorced parents, living with household members who were substance abusers, mentally ill or suicidal, or had ever gone to prison. Results indicated a strong graded relationship between the level of adverse childhood experiences (or ACEs score) and adult chronic disease as well as multiple risk factors for several of the leading causes of death in adults (Felitti et al., 1998). In the general population, over one third of adults’ report exposure to at least two ACEs (Anda et al., 2006).

Theories on how and why ACEs effect adults later in life vary. Some researchers believe that chronic or toxic stress early in life, when children are most vulnerable, has a long-term effect on the stress response in both the body and brain (Anda et al., 2006; Kendall-Tackett, 2002; Leitenberg, Gibson, & Novy, 2004) and that impacts how stress is processed, in turn leading to health problems. Others simply suggest that early exposure to ACEs leads to greater stress as an adult and the increased stress endured negatively affects health (Karatekin, 2018). Alternatively, some posit that the total number of stressors in an individuals’ life is what impacts health, regardless of whether the stress was experienced in childhood or adulthood (Seery, Holman, & Silver, 2010). Nevertheless, there is strong supporting evidence to demonstrate that the exposure to adversity, toxic stress, or trauma in childhood negatively influences physical and mental health as well as overall well-being in adulthood (Anda et al., 1999, 2006; Anda, Brown, Felitti, Dube, & Giles, 2008; Felitti et al., 1998, 2004; Karatekin, 2018; Lang et al., 2015).

Little is known about the influences of ACEs scores and SES (Metzler et al., 2017), or gender and racial differences (Schilling, Aseltine, & Gore, 2007). One study demonstrated that
ACEs related to unfavorable mental health impacts were greater and more consistent in White young adults as compared to young adults of color (Schilling et al., 2007). ACE scores are also strongly correlated to academic performance in the K-12 setting (Blodgett, 2012). Adults with higher ACEs scores are more likely to report not completing high school, being unemployed, and living in poverty (Metzler et al., 2017).

Early childhood adversity, hardship, or trauma is associated with not only diminished adult health and chronic disease, but influences maladaptive coping strategies, life opportunities, and persistent adversity throughout the lifespan (Anda et al., 1999, 2006; Anda et al., 2008; Karatekin & Ahluwalia, 2016; Lang et al., 2015). It is important to explore the cumulative effect of ACEs, as they often co-occur (Herrenkohl & Herrenkohl, 2007) and this collective impact has been associated with mental health problems (Chapman, Dube, & Anda, 2007) such as anxiety (Kessler et al., 2010), depression (Chapman et al., 2004), and has been linked to attempts of suicide (Dube et al., 2003).

Strong associations have been reported between high rates of childhood adversity and mental health outcomes, such as depression, anti-social behavior, and drug use, in young adults, during the transition from high school to early adulthood (Schilling et al., 2007). As ACE’s related adversity and mental health disorders persist from youth into adulthood (Clark, Caldwell, Power, & Stansfeld, 2010), it has become increasingly important to understand how ACEs and mental health impact college students. Preventing early adversity would not only benefit an individual’s health outcomes throughout their life, but also afford the possibility of more life opportunities (Metzler et al., 2017).

**ACEs in college students.** While the research is limited in college populations, high ACEs scores are known to be prevalent among college students (Read, Ouimette, White, Colder,
Approximately one third of undergraduate college students reported ACEs scores of two or higher (Anda et al., 2006; Karatekin, 2018). Similarly, a study of ACEs among college students in Ireland found that 35% had at least two ACEs (McGavock & Spratt, 2012). In the 1990’s, 38% to 53% of U.S. college students reported at least two lifetime adverse events (Smyth et al., 2008) and in 2015, nearly 40% of University of Minnesota students reported exposure to two or more ACEs (Boynton Health Service, 2015).

ACEs related research in college populations has yielded findings demonstrating correlations between ACEs and diminished health status (Karatekin & Ahluwalia, 2016) and poor mental health (Masuda et al., 2007; Singh, Manjula, & Philip, 2012; Tran, Dunne, Vo, & Luu, 2015). Mental health in college students has become increasingly concerning given the demonstrated high levels of anxiety, depression, and suicidality (Eisenberg, Gollust, Golberstein, & Hefner, 2007; Karatekin, 2018). Higher ACEs scores have been linked to increased levels of stress and lower levels of social support, with stress as the significant factor in college student mental health status (Karatekin & Ahluwalia, 2016). ACEs among college students have also been linked to increased symptoms of depression and ADHD, greater utilization of cigarettes, alcohol, and marijuana, as well as higher BMI and lower levels of sleep (Windle et al., 2018). College students are also more vulnerable to substance use and misuse (Center for Behavioral Health Statistics and Quality, 2016), and report a greater frequency of binge drinking than their non-college attending peers (Substance Abuse and Mental Health Services Administration [SAMSA], 2015), between 50% and 75% of college substance users, also indicated some level of ACE exposure (Forster, Grigsby, Rogers, & Benjamin, 2018).
While ACEs research in college populations is lacking, some investigators theorize that exploring ACEs alone may not be sufficient when attempting to develop effective implications for university student support services. Khrapatina and Berman (2017) looked at ACEs in college students to determine predictors of health problems, but explored factors of resiliency as well. Results demonstrated that ACEs were significant predictors of health problems, however, when both ACEs and resiliency were accounted for, gender and life satisfaction levels were the only significant predictors of health. While their study confirmed the long-term effects of childhood adversities on adult health, findings suggested that evaluating resiliency concurrently is necessary for comprehensively predicting health outcomes and better supporting college-aged students (Khrapatina & Berman, 2017).

There is an increasing need for screening college students for ACEs and those at high risk for mental health concerns (Healthy People 2020, 2017; Karatekin, 2018; Karatekin & Ahluwalia, 2016). Institutions may be hesitant due to ethical or methodological barriers, however there is growing evidence of the connection between ACEs scores and long-lasting health impacts. The benefits of screening may outweigh the costs (Karatekin, 2018). Due to the measures of abuse, neglect, and household function that would initiate contact with the social services system, McGavock and Spratt (2012) reported using only social services contact among college-aged young adults as an acceptable and effective proxy for the occurrence of multiple ACEs. As compared to peers, students with social services contact were 23% more likely to have experienced multiple childhood adversities (McGavock & Spratt, 2012).

While the best solution would be to prevent ACEs from occurring in the first place, the timing is advantageous to determine effective strategies for postsecondary institutions to both support students for academic and subsequent career success, but also for the education and
healing of mental health problems. Perhaps higher education can be the catalyst in addressing the mental health crisis and changing the family tree and future outlook for so many.

**ACEs, toxic stress, and trauma.** When addressing ACEs, it is necessary and important to discuss the various types of stress, given the effects on the body and long-term outcomes. In fact, ACEs are said to be a form of “toxic-stress,” “chronic stress”, or “traumatic toxic stress” (Center on the Developing Child, 2017; Oral et al., 2015). Specifically, ACEs describe the harmful event(s) or circumstance(s) that induce stress in the body. Toxic or traumatic stress describes the type of stress response occurring in the body during and after ACEs or other traumatic events. It becomes chronic due to the prolonged nature of ACEs and household dysfunction. This type of stress is not the “typical or normal” stress experienced in daily life and therefore needs to be examined in order to understand the long-lasting effects of ACEs. The National Scientific Council on the Developing Child (2005/2014) has identified three types of stress to assist health care and medical practitioners identify stress symptomology in individuals. The types of stress are outlined below and include several examples for each type.

**Positive stress.** Described as moderate, short-lived, or acute, stress responses, positive stress is demonstrated by brief increases in heart rate or mild changes in the body’s stress hormone levels, and return to normal when the situation is over. This type of stress is considered a normal part of life, and with the support of caring adults and safe environments, children can learn to control and manage positive or acute stress responses. Examples of positive or acute stress include meeting new people on the first day of school, getting into a car accident, rushing to meet a deadline, trying something new, occasional problems with friends, going on a first date, or having an argument with parents (National Scientific Council on the Developing Child, 2005/2014).
**Tolerable stress.** Stress responses that are longer-lasting and more severe, are considered tolerable stress, however this type of stress is time-limited. Tolerable stress responses may occur as a result of the death or serious illness of a loved one, an adversarial parental separation or divorce, persistent discrimination, or a natural disaster. These situations are considered tolerable if they are buffered by supportive relationships with adults and safe environments that help children learn to cope with and recover from difficult circumstances. Without supportive relationships, these types of stress responses can leave toxic or damaging effects to the body and brain (National Scientific Council on the Developing Child, 2005/2014).

**Toxic stress.** Coined by National Scientific Council on the Developing Child (2005/2014), toxic stress refers to intense, repetitive, prolonged, or chronic, activation of the body’s stress management system and surpasses the normal levels of daily stress and challenges. Stressful events that are chronic, uncontrollable, and/or experienced without the buffering of support from caring adults induce toxic stress responses and can impair brain development.

In the cases of chronic abuse, neglect, dysfunction, violence, or poverty, especially during childhood, brain development is impacted (Shonkoff et al., 2012). ACEs affect long-term health by inducing a toxic stress response that increases the levels of stress hormones in the body. Over time, exposure to these high levels of hormones in the body can lead to organ dysfunction and can alter the biology of the stress response system (Center for Youth Wellness, 2017; Shonkoff et al., 2012), so that the body responds at lower thresholds to situations that may not be stressful to others. The brain is altered so that an individual’s physiological stress response converts it to toxic stress. When this happens, normal events can be perceived as life-threatening experiences (Shonkoff, et al., 2012; Teicher et al., 2013). Therefore, the stress response system is activated more frequently and for longer periods of time than is necessary.
(National Scientific Council on the Developing Child, 2005/2014). This wear and tear on the body can increase the risk of stress-related physical and mental illness later in life (Shonkoff, Boyce, & McEwen, 2009), as well as compromising an individual’s learning, memory, and behavior (Shonkoff et al., 2012). Scholars have often discussed this “wear and tear” on the body (Center on the Developing Child, 2017; Danese & McEwen, 2012) and relate the negative impacts of ACEs as a result of toxic stress getting “under the skin” (Danese & McEwen, 2012).

Exposure to toxic stress without the buffering of a supportive adult caregiver, leads to impairments of children’s brain and bodies, including diminished learning, behavioral difficulties, lowered immunity, and weakened hormonal and growth systems that can follow children into adulthood. Changes to the brain can lead to decreased cognitive learning, attention deficits, hyperactivity, learning disabilities, emotional self-regulation, decreased memory formation and attention, as well as anxiety (Center for Youth Wellness, 2017; Oral et al., 2015). Too much cortisol is present during toxic stress and can lead to immune disfunction, increases in infection, and increased inflammation in the body (Oral et al., 2015).

The chronic activation of the fight and flight systems of toxic stress exacerbate acute stress responses so that the allostatic load, or accumulated cost of chronic stress, influences the negative and long-term biological effects of health and aging (Danese & McEwen, 2012). Garner (2013) described toxic stress as it relates to childhood adversity. In an attempt to stop or numb the toxic stress response, also called “behavioral allostasis” (or return to some biological stability), some individuals use behaviors such as smoking, substance abuse, overeating, and promiscuity to momentarily decrease or relieve stress. However, used frequently and for a prolonged time, these behaviors become maladaptive, and therefore create a destructive cycle alternating between toxic stress and maladaptive coping behaviors. Overtime, these behaviors
lead to unhealthy lifestyles, chronic disease, and early death (Garner, 2013). In their report, Shonkoff et al. (2012) suggested that the mitigation of toxic stress inducing exposures in childhood may assist the efforts in reducing persistent health disparities associated with poverty, discrimination, or maltreatment.

**Post-traumatic stress disorder (PTSD).** The examination of chronic and toxic stress, as it pertains to ACEs, is also crucial because it is closely linked to trauma and post-traumatic stress disorder (PTSD). In fact, ACEs are associated with an increased risk of PTSD (Lagdon, 2018; McLaughlin et al., 2017). This finding has been documented since before the seminal ACEs study in 1998 (Felitti, et al.), when Vrana and Lauterbach (1994) evaluated lifetime prevalence of traumatic events (dating back to childhood). Authors determined that participants who had experienced trauma reported increased levels of anxiety, depression, and PTSD, and those with multiple forms of trauma experienced increased symptom severity (Lagdon, 2018; McLaughlin et al., 2017). Those exposed to trauma in childhood were twice as likely to develop depression and PTSD (Dunn, Nishimi, Powers, & Bradley, 2017). PTSD leads to multiple areas of dysfunction including education, family, peers and relationships, legal, and professional (Van der Kolk, 2017).

In addition to childhood adversity, other factors that have been significant in predicting PTSD included lower educational levels, female gender identification, and race (dichotomously coded underrepresented and White), as well as trauma severity, life stress, and lack of social support (Brewin, Andrews, & Valentine, 2000). With regard to ACEs, an increased risk of PTSD has also been associated with maternal distress, the loss of a parent, low IQ, as well as chronic environmental adversity (Koenen, Moffitt, Poulton, Martin, & Caspi, 2007). In spite of this, emotional regulation has been effective as mediator between ACEs and PTSD, depression,
and poor physical health (Cloitre et al., 2018), and the improvement of emotional regulation skills may be valuable in mediating the negative impacts of ACEs.

**PTSD among college students.** Childhood emotional abuse and neglect often go unrecognized, may be the most prevalent, and are associated with more severe and prolonged negative outcomes than that of physical and sexual abuse and maltreatment (Center on the Developing Child, 2013; Wright, Crawford, & Castillo, 2009). This type of abuse and neglect leads to anxiety and depression, in addition to internalized models of vulnerability to harm, self-sacrifice, shame, and dissociation. Wright et al. (2009) suggested that the negative impacts of how college students internalized and adopted these feelings were more important and concerning than that of the traumatic experience itself.

PTSD has also been associated with effort regulation challenges among college students (Boyraz, Granda, Baker, Tidwell, & Waits, 2016; Van der Kolk, 2017) as the imprint of the trauma becomes internalized in the cognition of the individual (Van der Kolk, 2017). Effort regulation refers to the ability of the student to regulate their effort for academic and personal success. For example, academic performance is impacted by an individual’s ability to focus, demonstrate intrinsic motivation and goal orientation, self-efficacy over one’s abilities to succeed, and manage difficulties such as test anxiety. For those students with PTSD, self-regulatory efforts are more difficult and academic performance and college persistence is at risk (Boyraz et al., 2016; Van der Kolk, 2017).

Evidence of these academic struggles and risk of dropping out of college have been documented among students that enter college with a history of trauma and adversity (Bachrach & Read, 2012; Boyraz, Horne, Owens, & Armstrong, 2013). Students entering college with PTSD have also been associated with reduced academic performance and an increased risk of
attrition (Boyraz, Granda, Baker, Tidwell, & Waits, 2016). Students with higher levels of PTSD symptoms in their first semester have a higher risk of dropping out before the end of the second year of college, although first-year GPA may serve to somewhat mitigate this finding (Boyraz et al., 2013). Other scholars suggest that students entering college with trauma exposure, whether it included PTSD or not, may be more resilient than their traumatized peers that were not able to make it into college (Banyard & Cantor, 2004; Twamley, Hami, & Stein, 2004).

ACEs, toxic stress, and PTSD among college students is concerning, for both their academic success and future outlook. Interventions for supporting college students as well as education and outreach as prevention efforts are needed. Garner (2013) suggested that future research focus on educating caregivers and communities in an effort to prevent early childhood adversity, buffer toxic stress, and enhance healthy coping skills in safe and nurturing interactions and environments. This is particularly important for college students, as social and family support play an especially valuable role in mediating the effects of childhood maltreatment related mental health concerns (Lagdon, 2018).

**Summary**

Literature was reviewed focusing on student diversity in higher education as it pertains to diversity related barriers and high impact practices, as well as class and socioeconomic status, and stress experienced by students in higher education. An introduction and assessment of Adverse Childhood experiences, related health outcomes and connections between ACES, toxic stress, trauma, and college students were also explored. Based on the literature, higher education is known to be both a transformational and stressful time (D’Zurilla & Sheedy, 1991; Kadison & DiGeronimo, 2004; Pierceall & Keim, 2007; Ross et al., 1999; Towbes & Cohen, 1996), especially so for nontraditional (Forbus et al., 2011) and first-generation students (Atherton,
Exploring the negative health outcomes and chronic disease prevalence in populations with higher ACES scores is particularly troubling when considering how higher ACES scores influence toxic stress, and can impact the health and well-being of college students. It has become increasingly necessary to continue to evaluate and understand the factors influencing college student stress in order to effectively address mental health support and treatment (Beiter et al., 2015; Hawley et al., 2016) and equitably support and retain students for the best possible opportunities for academic and future success.
CHAPTER THREE: METHODOLOGY

Research Design and Rationale

The purpose of this study was to understand and describe the characteristics and prevalence of the college students most at risk for high ACEs scores, as well as determine the association between college student ACEs and academic performance. This study employed a quantitative design to determine the relationship between ACEs scores (independent variable) and first-generation status (independent variable) as demonstrated by diverse undergraduate students at a four-year university. Additionally, ACEs scores and self-reported demographic data (independent variables including race/ethnicity, gender, and first-generation status) were used to determine prediction values for academic success (dependent variable).

Quantitative research is “a formal, objective, systematic process in which numerical data are used to obtain information about the world. This type of research is used to describe variables, to examine relationships among variables, and to determine cause-and-effect interactions between variables” (Burns & Grove, 2005, p. 23). The quantitative research design acts as the structure or “blueprint for conducting a study” (Burns & Grove, 2001, p.223), while assisting the researcher to plan, implement, analyze, and interpret their “investigation in a logical and systematic way” (Polit, Beck, & Hungler, 2001, p.465). Similarly, Creswell (2009) defines quantitative research as “a means for testing objective theories by examining the relationship among variables” (p.223). To further describe correlational research, Leedy and Ormrod (2013) state that it involves “a statistical investigation of the relationship between two or more variables” (p. 100). Despite the nature of correlational research seeking to describe relationships, inferences regarding causal relationships cannot necessarily be made.
This quantitative study utilized a non-experimental descriptive and correlational survey design, in order to generate knowledge and facilitate recommendations for the improvement and practices in higher education student supports and services. In this way, the study fosters the capacity to “solve problems, make decisions or control outcomes in real-life situations” (Polit et al., 2001, p.38). One strategy employed in descriptive research is through surveying (Mertens, 2014). Surveys utilize various question response types, such as multiple choice, or point-scales, as well as categorical scales (yes/no) and rank ordered scales (highest to lowest importance) (Creswell, 1994). Survey data allows for a rapid turn-around and sample data can be generalized to a population (Creswell & Creswell, 2017). A cross-sectional survey was used in this study, meaning that information was collected at a specific point in time (Creswell, 1994; Lorenzetti, 2007). Additionally, the use of surveys as research tools is supported because they are a consistent means for exploring observations among large populations, at a specific point in time, and can be beneficial for providing data to encourage organizational improvement (Lorenzetti, 2007).

This study drew from existing exploratory data, initially designed to assess the impact of ACEs on academic success in college students (Neider, 2018). Research on ACEs has been predominately limited to the health and medical fields. ACEs are a rather new construct for higher education and it is necessary to understand the characteristics, prevalence, and influences of ACEs on college level students. Using quantitative methods, ACEs scores were paired with first-generation status to determine statistical significance. Additionally, ACEs scores and self-reported demographic data (variables including race/ethnicity, gender, and first-generation status) were used to determine prediction values for academic success, as measured by student cumulative GPA.
This chapter describes the rationale for the research design and methodology utilized in the study, including context, participants, instrumentation, validity and reliability, as well as data collection, and statistical analysis methods. Good education research is “a matter not only of sound processes but also of beneficial aims and results; our ultimate aim as researchers and educators is to serve people’s well-being” (Hostetler, 2005, p.16). The results of this research can be used to facilitate healthier, happier, more supported, and more successful college students and higher education campus climates.

**Context and Access**

Archival data originated from student survey responses collected from a larger exploratory study investigating the relationship between ACEs, demographics, and the methods for which college students navigate stress (Neider, 2018). The survey was administered over the course of three terms during years 2015 to 2016 at a diverse, four-year, Land-Grant, research extensive university campus, with 24,470 undergraduates enrolled.

As stated briefly in Chapter One, ACEs research is retrospective in nature, including a risk for participant recall bias (Scott et al., 2010). In a retrospective study, “the information about the phenomenon is collected as it occurred and focuses on the presently occurring outcome, then tries to ascertain antecedent factors that may have caused it” (Burns & Grove, 2001, p.249). In this study, adult college students were stating their past exposure to adverse childhood experiences and ACEs were the presumed causal factor (or independent variable). The researcher had no control over this variable as it had already occurred. In this study, information was pursued to better understand the implications of ACEs scores on college students and their capability for academic performance. Studies that rely on the recollection of retrospective events have inherent limitations as the study relies on the accurate reporting of the
participants to remember their past (Polit et al., 2001). Retrospective studies are also both time and financially cost-effective.

**Role of the Researcher/Positionality**

While quantitative research results are relatively independent of researcher bias (Burns & Grove, 2005; Johnson & Onwuegbuzie, 2004), it is important to understand researcher positionality. The researcher is a White female, first-generation, single mother, with an ACEs score of three, and a life-long quarrel with depression. Professionally, the researcher’s background encompasses approximately two decades of social justice-based community teaching, and educational leadership experience rooted in the framework and theories of health education and health promotion. As a Certified Health Education Specialist (CHES), the researcher’s personal and professional core values are those characteristics embracing what it means to be a “health educator.”

The World Health Organization (WHO, 2012) defines health education as “any combination of learning experiences designed to help individuals and communities improve their health, by increasing their knowledge or influencing their attitudes (WHO, 2012). Wallerstein and Freudenberg (1998) linked health promotion to social justice in that it “offers a chance to tap into people’s deepest aspirations” (p.456). They argued that health educators had a unique opportunity to wear two hats at the same time, both as health educators promoting health, wellness and healthy living, and advocating for social justice by serving and representing the underserved communities and individuals (Wallerstein & Freudenberg, 1998). While the field of health education and public health have a history of working with underserved and underrepresented communities in hopes of improving health and decreasing illness, connecting the two also unite the ability to jointly “help[...] people, create healthier, more democratic and
just communities” (p. 456). It also “legitimizes a perspective of social justice and empowerment as a part of public health and health education” (Wallerstein & Freudenberg, 1998).

The researcher has also completed two comprehensive Center for Mind Body Medicine’s (2016, 2017) professional trainings in order to conduct educational, meditative, and self-healing workshops in the region. With a background in community and public health, higher education administration, as well as a more recent professional passion for healing trauma through mind-body medicine strategies, it was fitting to “wear two hats” (Wallerstein & Freudenberg, 1998) with a study exploring the relationship between ACEs, college student stress, and academic performance, important concerns for both the fields of higher education and public health. The researcher’s commitment to public health prevention and dedication to higher education student success echoes the words of Hostetler in that, “our ultimate aim as researchers and educators is to serve people’s well-being” (2005, p.16).

Study Participants

Participants consisted of a convenience sample of college students at a university located in a rural area in the Pacific Northwest. A total of 1,197 student participants, enrolled in one of five courses throughout three terms, completed the online survey. Students were enrolled in one of five courses: Fall 2015, Fall 2016, or Spring 2016 100-level biology, or Spring 2016 100 or 200-level human development (Figure 2). Study participants demonstrated sample population diversity as these courses fulfilled university core curriculum requirements and served a cross-section of majors.

Instrumentation

The survey instrument was an online compilation of four separate adapted surveys, including participant demographic questions, the ACEs questionnaire (see Appendix B), the
CCLSS assessment, as well as three reflective questions. The demographic survey questions included the following nine queries: race/ethnicity, language(s) spoken, gender, age, first-generation student status, year in college, previous college experience, academic major and minor, and parental education level (Davis & Neider, 2015-2016). Questions pertaining to potentially stress inducing and psychologically distressing college experiences were asked using The College Chronic Life Stress Survey (CCLSS) (Towbes & Cohen, 1996) in its original form and without adaptation. The CCLSS has been shown to be a significant predictor of distress and is used throughout higher education to describe stress in college students (Towbes & Cohen, 1996). Finally, the survey concluded with three open-ended qualitative and reflective questions pertaining to students’ college transition, as well as barriers and supports experienced throughout any academic endeavors (Davis & Neider, 2015-2016). For the purposes of this study, the CCLSS and open-ended qualitative results were not assessed. The CCLSS questionnaire addressed acute stress, demonstrated by survey instructions and questions pertaining to stressful events taking place in a relatively short (e.g. monthly) timeframe. The CCLSS does not assess prolonged and toxic levels of stress. This study examined ACEs among college students and the specific emphasis and discussion of chronic, traumatic, and toxic stress, was both relevant and necessary. Therefore, the quantitative data utilized for this study included only the demographic data and the ACEs data.

**Origin of the ACEs questionnaire.** Following the demographic section, the survey instrument included questions regarding childhood stressors, adapted from the ACEs Questionnaire (Blodgett, 2012; Felitti, 2004; Felitti et al., 1998). The original ACEs questionnaire (Felitti et al., 1998, see Appendix A) was comprised of ten categorical questions
(e.g. response options included “yes” or “no”), that can be grouped into three broad categories: childhood abuse, neglect, and household dysfunction.

The original ACEs questions pertaining to childhood abuse consisted of three distinct questions regarding psychological, physical, and sexual abuse (Felitti et al., 1998). Two childhood neglect questions included both physical and emotional neglect. Finally, five household dysfunction questions consisted of the following: substance abuse, divorce, mental illness, battered mother, and criminal behavior. In joint collaboration between the CDC and Kaiser Permanente, Felitti et al. (1998) developed the ACEs questionnaire through adaptation of the following established inventories: Childhood Trauma Questionnaire (CTQ) and the Conflict Tactics Scales (CTS) (Bernstein et al., 1994; Dube et al., 2003; Straus, 1979).

The CTQ was designed as a retrospective quantitative measure of child abuse and neglect, including a structured Childhood Trauma Interview (Bernstein et al., 1994). Five-point scales were used for CTQ responses, consisting of “never true,” “rarely true,” “sometimes true,” “often true,” and “very often true.” The CTQ demonstrated high internal consistency (α = 0.79 to 0.94), good test-retest reliability (Intraclass Correlation Coefficient (ICC) = 0.88), as well as convergent validity with the Childhood Trauma Interview (Bernstein et al., 1994). The emotional and physical neglect questions developed for the ACEs questionnaire were adapted from the CTQ (Bernstein et al., 1994).

Similarly, the CTS measures “Reasoning, Verbal Aggression, and Violence within the family” (p. 79). Straus (1979) reported that using a nationally representative sample of 2,143 couples, the CTS demonstrated “moderate to high reliabilities, and there is evidence of concurrent and construct validity” (p. 85). The CTS included five response categories including, “never,” “once or twice,” “sometimes,” “often,” or “very often.” Two of the three CT scales
were modified for the ACEs survey to define emotional and physical abuse, as well as household dysfunction (Dube et al., 2003). The two CT Scales utilized both demonstrated high reliability: verbal aggression ($\alpha = 0.77$ to 0.88) and violence ($\alpha = 0.62$ to 0.88) (Straus, 1979, p. 83).

**Current study.** In consideration of this ACEs study and following the concerns and logic of Blodgett (2012), and university responsibilities as mandatory reporters, the childhood adversity questions were modified to enhance the capacity to “safely ask about adversity” (p.3). Of the three broad categories (Felitti et al., 1998): childhood abuse, neglect, and household dysfunction, questions were modified by the following methods. The three questions pertaining to childhood abuse on the original survey (Felitti et al., 1998) were modified to two questions. The question pertaining to psychological abuse was included in its original form, however, both the physical and sexual abuse questions were omitted, with a question regarding childhood contact with Child Protective Services in its place. As stated in Chapter Two, contact with the social services system is an acceptable and effective proxy for measuring the occurrence of ACEs (McGavock & Spratt, 2012). Of the two questions regarding childhood neglect, the question describing emotional neglect was kept in its original form, however the question about physical neglect was updated to reflect a question about homelessness. Lastly, the five original household dysfunction questions including, substance abuse, divorce, mental illness, battered mother, and criminal behavior, were included in the survey unaltered, with the exception of wording for the battered mother question. The survey used for this study modified the question to reflect more inclusivity as “any parents or step-parents” (Davis & Neider, 2015-2016). Due to survey modifications and adaptation of the 10 original questions (Felitti et al., 1998) to nine questions, high ACEs in this study are defined as an ACEs score of three or higher (Neider, 2018). This is based on the concerns and logic of Blodgett (2012), and university responsibilities
as mandatory reporters, and is a variation from the original ACE study where high ACEs was represented as a score of four or more childhood adversities (Felitti et al., 1998).

**Data Collection Procedures**

As previously mentioned, data for this study included archival data collected from a larger exploratory study investigating the relationship between ACEs, demographics, and the methods for which college students navigate stress (Davis & Neider, 2015-2016). A total of 1,197 student participants completed the online survey. Participant data was collected via a Qualtrics online survey tool (Qualtrics, Provo, UT). Qualtrics Research Suite Software™ (Qualtrics, Provo, UT) was used to develop electronic surveys that participants completed using personal computers, after receipt of an emailed survey link. Data were stored on the Qualtrics (Qualtrics, Provo, UT) server using a confidential and secure protocol.

Archival data was originally collected through online surveys conducted at approximately week five of the 15-week term in five courses throughout three terms, and following IRB approval. In the Fall term of 2015 and Fall term of 2016, course faculty sent online surveys to undergraduate students in a 100-level introductory biology course. In the Spring term of 2016, online surveys were sent to undergraduate students in the 100-level introductory to biology course as well as both 100-level and 200-level human development courses (Figure 2).

![Figure 2. Data Collection Timeline](image-url)
These courses satisfied university core curriculum requirements and served a cross-section of majors, resulting in sample population diversity. All five courses were included in the archival data set utilized in the current study. One of the courses (Spring 2016, 200-level Human Development) did not receive the CCLSS, however, since that data was not utilized for the purposes of this study, the available ACEs and demographic data were included in the current analyses.

Drawing from Don Dillman’s work on survey methodology (Dillman, 2011; Millar & Dillman, 2011; Schaefer & Dillman, 1998), recruitment during each of the applicable terms spanned a three-week time period using the following procedures: students were initially invited to participate in the study during week five of the term, followed by an announcement during class approximately two weeks later. One week following the class announcement, a reminder about participation was forwarded to students via email (Neider, 2018). Concerns about the potential to trigger Post-Traumatic Stress for students was addressed by dissemination of information connecting students to university and community support services (e.g. mental and physical health services, food insecurity resources, etc.).

Cumulative GPA data was not self-reported, but provided by university student records following participant completion of the online survey. The initial survey (Fall 2015) was a pilot and did not ask participants to provide identification information that could later be used to connect survey responses to GPA. Subsequent iterations of the survey did ask for participant identification and accompanying data included the collection of participant GPA. Therefore, the data set examined in this study utilized partial information with regard to GPA. While it was only one of the five courses that did not ask participants for identification information, in instances where a participant declined to provide identification information, GPA data was not
available. Online survey questions were not “required” in order to progress through the entirety of the survey. As with GPA, missing data was modestly visible throughout the collected data set.

**Ethical Considerations**

Institutional Review was sought, and ultimately deemed unnecessary due to the nature of the current study’s utilization of pre-existing data and non-involvement of human subjects. The initial study from which the archival data was collected, was executed with approved Institutional Review oversight. Additionally, Informed Consent was obtained from students that participated in the original study. Participants were notified of the research purpose, what to expect, study benefits and risks, confidentiality, and opportunity to provide voluntary informed consent prior to participation in the online survey. As stated earlier and due to the sensitive nature of the survey’s prompts about childhood family dysfunction, concerns about the potential to trigger Post-Traumatic Stress for participants were addressed at the time of original data collection by dissemination of information connecting students to university and community support services (e.g. mental and physical health services, food insecurity resources, etc.).

The current research utilized archival data that did not impose any type of harm to participants. Student participants were not involved or contacted in any way and therefore the study posed no threat of stress, anxiety, diminished sense of self, or invasion of privacy. The integrity of confidentiality was upheld as this study used quantitative methods and was both analyzed and reported free from individual or unique identifiers. Additionally, while the original study collected both quantitative and qualitative data, only relevant quantitative records were accessed and analyzed for this research. The researcher declares no conflicts of interest with the study.
Statistical Analysis

In order to examine the influences of ACEs scores, participant demographic data, and academic performance, data was analyzed using descriptive and inferential statistics with the IBM SPSS Statistics software (Version 25.0). Descriptive statistics were used to analyze demographic survey data. Categorical data set responses were counted and reported as percentages. The categorical data sets included: 1) Gender (e.g. three groups: “yes,” “no,” and “other”), and 2) First-Generation college student status (e.g. dichotomous groups: “yes” or “no”). For Gender, the Other category was excluded from statistical analysis due to limited representation ($n = 7$). Additionally, scale data sets including ACEs Scores (e.g. intervals ranging from scores of “0” to “9”) and cumulative GPA (e.g. ranging from “0.0” to “4.0”) were descriptively analyzed, as well as assessed in the prediction analyses.

Race and ethnicity. The survey instrument included an open ended/text-entry question for race/ethnicity and was dummy coded for analysis. Six categories were established including, “Asian or Pacific Islander,” “African American or Black,” “Hispanic or Latino/a,” “White,” “Other or multiple races,” and “Not applicable (N/A).” Categories for race/ethnicity were determined by adapting the National Institutes of Health (NIH), Racial and Ethnic Categories and Definitions for NIH Diversity Programs and for Other Reporting Purposes, guidelines (NIH, 2015). The “Native Hawaiian or Other Pacific Islander” category was combined with “Asian” and the “Other/Multiple Races” category included entries that listed more than one race, as well as “American Indian/Alaska Native”. “American Indian/Alaska Native” was originally a separate category and then later combined with the “Other/Multiple Races” category as it was not well represented ($n = 10$). The “N/A” category included entries that were not missing, but did not pertain to race or ethnicity at all. In fact, many of these entries included the participants’ city of
residence and therefore were excluded from the analysis. The “N/A” race/ethnicity data is discussed in more detail in Unanticipated Findings located in the Discussion section of Chapter Five.

**Parent education.** The survey instrument contained separate questions pertaining to first-generation status and parent educational level, and because of variable redundancy, study research questions were limited to first-generation status alone. However, instructions on how to define first-generation status were not included in the survey and this led the researcher to use the parent educational level data to do a “self-check” regarding how participants may have defined first-generation status. Specifically, prior to running data analyses, it was appropriate to determine if self-reported first-generation status included data relevant to one or more parents who received a four-year degree or higher, versus a two-year degree or higher.

The survey listed parent education level as a table consisting of two columns, one for “Mom” and one for “Dad.” There were nine options for selecting educational level, including: a) “Less than high school,” b) “High School – No College,” c) “Some College,” d) “Associate’s Degree,” e) “Bachelor’s Degree,” f) “Master’s Degree,” g) “Doctorate,” h) “Professional Degree,” and g) “Unknown.” The survey allowed for the option to select any of the nine educational levels for both Mom or Dad.

Frequency data was utilized to determine the appropriate use of “first-generation status” by comparing Parent Education data against First-Generation variable data. Overall sample population data for First-Generation and Multigeneration was used as a reference when comparing frequency data of two separate Parent Education options. Parent Education was evaluated utilizing a four-year degree or higher as a filter for both the Father’s and Mother’s educational level. Then, Parent Education was explored using a two-year degree as the screening
indicator for describing first-generation status. Results were then compared to the first-generation reference to determine the means for which participants defined first-generation status. Redford and Hoyer’s (2017) definition of first-generation as “…students who enrolled in postsecondary education and whose parents do not have any postsecondary education experience” can be vague in regards to the two-year degree. This comparison was appropriate to determine whether participants identified as first-generation or multigeneration with a parent education level of an Associate’s or two-year degree.

First-generation status and ACEs. The Mann-Whitney U test (Mann & Whitney, 1947) was conducted to determine statistical significance between ACEs scores (e.g. interval scale data ranging from scores of “0” to “9”) and first-generation students as compared to multigenerational students (e.g. dichotomous groups referencing first-generation status: “yes” or “no”). A Mann-Whitney test was more appropriate for this analysis, versus independent t-tests, because one of the individual groups (ACEs Scores) was not normally distributed. For this study, ACEs Scores were skewed right.

Academic performance. Nonparametric multiple regression (Aldrich, 2005; Fisher, 1922, 1925) was utilized to test for statistical significance and to analyze prediction outcomes for academic success, as determined by cumulative GPA. A multiple regression was run to predict dependent variable, GPA, from independent variables, Race/Ethnicity, Gender, First-Generation Status, and ACEs Scores. GPA was scale data, ranging from “0.0” to “4.0.” The variables of Gender and First-Generation Status were both dichotomous (0 = Male, 1 = Female; and 1 = First-Generation, 0 = Multigeneration; respectively), and ACEs Scores were interval scale data, ranging from scores of “0” to “9.” For the race/ethnicity, four of the six dummy coded variables described previously were entered in to the multiple regression analysis. The four variables
included, “Asian/Pacific Islander,” “African American/Black,” “Hispanic/Latino/a,” and “Other/Multiple Races.” As mentioned above, the “N/A” category was excluded and the “White” category was used as the reference category for the multiple regression analysis.

This test was appropriate to use because it analyzed the prediction outcomes of one dependent variable, cumulative GPA, against seven independent variables (e.g. Dummy-coded variables: 1) “Asian/Pacific Islander,” 2) “African American/Black,” 3) “Hispanic/Latino/a,” 4) “Other/Multiple Races,” as well as 5) Gender, 6) First-Generation Status, and 7) ACEs Score). Additionally, nonparametric multiple regression was appropriate for its non-specificity of selecting a model in advance, its interactive effects of predictors, and due to the large sample size in this study (N = 1,197). The level of statistical significance was established at p < .05. With regard to statistical significance, the model’s variance was explained using $R^2$ and standardized betas were used to determine statistical significance for each of the independent variables. This method of analysis enabled the researcher to determine how well ACEs scores and student demographics (e.g. race/ethnicity, gender, and first-generation status) were able to predict college academic performance.

**Summary**

Utilizing a descriptive and correlational survey design, this chapter described the non-experimental quantitative research methodology to investigate and describe the characteristics and prevalence of the college students most at risk for high ACEs scores, as well as determine the association between college student ACEs and academic performance. This chapter also explored the research context, selected study participants, survey tool development, as well as data collection and statistical analysis methods. Chapter Four conveys research results, while
Chapter Five includes a discussion of research conclusions and future implications pertaining to ACEs and college students.
CHAPTER FOUR: RESULTS

As stated in Chapter One, the purpose of this study was to understand and describe the characteristics and prevalence of the college students most at risk for high ACEs scores, as well as determine the association between college student ACEs and academic performance. The three main goals of this study were to; 1) Contribute to the limited, yet growing, body of literature pertaining to ACEs in higher education, including insight regarding the prevalence and risks for college students with exposure to adversity in childhood, 2) Provide valuable research outcomes to better assist and inform the efforts of the larger exploratory study investigating ACEs and the strategies for which college students navigate stress (Neider, 2018), and 3) Make implications and recommendations for practitioners in both higher education and public health to more aptly serve and support the needs of diverse current and incoming college students through support services such as screening, intervention, prevention and education efforts, as well as professional development and training.

This chapter articulates the results of this research and is organized by the two guiding research questions presented in Chapter One:

**RQ1.** What is the difference in Adverse Childhood Experiences (ACES) scores between first-generation and multigenerational university students?

**RQ2.** How well do ACES scores and student demographics, including race/ethnicity, gender, and first-generation status, predict student academic performance*?  

*measured by student cumulative GPA.

Demographic information about the sample student population is included first. Next, findings of the non-parametric tests examining the relationship between ACE scores and first-generation status are described. Following these results, academic success prediction outcomes for diverse
undergraduate university students are reported and analyzed. Finally, a summary of research analyses is briefly illustrated.

**Survey Data and Sample Population**

As stated in previous chapters, archival data stemmed from undergraduate college student online survey responses collected from a larger exploratory study investigating the relationship between ACEs, demographics, and the methods for which college students navigate stress (Neider, 2018). \( N = 1,197 \). The archival data set originally included 1,296 cases. After removing eight cases where the ACEs survey was not completed or even attempted, 1,245 participant entries remained. Forty-eight duplicate cases were merged and removed, leaving 1,197 as the final data set for analysis. Notable however, was the inability to determine duplicates for the Fall 2015 data due to lack of participant identifiers, as described in the previous chapter. In cases where a duplicate existed because a participant took the survey in two separate courses, the most recent survey data was utilized in the study analysis (including the most current cumulative GPA).

Of the 1,197 participants, the majority of students indicated a race/ethnicity as White \( n = 780, 66.4\% \). Additionally, 71% of participants were female \( n = 841 \), as compared to 29% male, and less than 1% as a gender other than female or male, \( n = 344, 7 \), respectively. More participants described themselves as multigenerational students \( n = 740, 62\% \), while 38% reported first-generation student status \( n = 453 \). A summary of the sample population is described in Table 1.
Table 1.

Demographic Characteristics and ACEs Score Among Sample Population

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total</th>
<th>Low ACEs</th>
<th>High ACEs*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>780</td>
<td>66.4</td>
<td>627</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>132</td>
<td>11.2</td>
<td>106</td>
</tr>
<tr>
<td>African American or Black</td>
<td>42</td>
<td>3.6</td>
<td>31</td>
</tr>
<tr>
<td>Hispanic/Latino/a</td>
<td>111</td>
<td>9.4</td>
<td>71</td>
</tr>
<tr>
<td>Other or More than One Race**</td>
<td>86</td>
<td>7.3</td>
<td>60</td>
</tr>
<tr>
<td>Not Applicable***</td>
<td>23</td>
<td>2.0</td>
<td>18</td>
</tr>
<tr>
<td>Not Reported</td>
<td>22</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>841</td>
<td>71.0</td>
<td>629</td>
</tr>
<tr>
<td>Male</td>
<td>344</td>
<td>29.0</td>
<td>292</td>
</tr>
<tr>
<td>Other†</td>
<td>7</td>
<td>.6</td>
<td>3</td>
</tr>
<tr>
<td>Not Reported</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>First-Generation Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First-Generation</td>
<td>453</td>
<td>38.0</td>
<td>301</td>
</tr>
<tr>
<td>Multi-Generation</td>
<td>740</td>
<td>62.0</td>
<td>625</td>
</tr>
<tr>
<td>Not Reported</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,197</td>
<td>-</td>
<td>929</td>
</tr>
</tbody>
</table>

Note: Totals and percentages are calculated within each variable group. Percentages excludes missing cases for each demographic variable.

*High ACEs refer to an ACEs score of three or higher (Blodgett, 2012; Neider, 2018).

**Includes all instances where two or more race/ethnicities were indicated. Also, includes all Native Americans as there were too few cases (n = 10) for a separate category.

***This includes non-relevant data (e.g. subject’s city) and were excluded from analysis.

†The Other category was excluded from statistical analysis due to limited representation.

Tables 2 and 3 present the comparison of the sample to university demographics, as well as the distribution of study participant course enrollment, respectively. Diversity in the sample population (e.g. race/ethnicity and gender) is displayed in Table 2, and is representative of the diversity demonstrated at the participants’ university. As shown in Table 3, distribution of participant course enrollment ranges from 16% in the Fall 2016 to 24.1% in the Spring 2016 100-Level Human Development course. Within each course, those participants demonstrating
Table 2.

*Representation of Sample Population at Participants’ University*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Participant Total</th>
<th>Participants’ University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n )</td>
<td>%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>780</td>
<td>66.4</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>132</td>
<td>11.2</td>
</tr>
<tr>
<td>African American or Black</td>
<td>42</td>
<td>3.6</td>
</tr>
<tr>
<td>Hispanic/Latino/a</td>
<td>111</td>
<td>9.4</td>
</tr>
<tr>
<td>Other or More than One Race**</td>
<td>86</td>
<td>7.3</td>
</tr>
<tr>
<td>Non-Resident Aliens</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not Applicable***</td>
<td>23</td>
<td>2.0</td>
</tr>
<tr>
<td>Not Reported</td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>841</td>
<td>71.0</td>
</tr>
<tr>
<td>Male</td>
<td>344</td>
<td>29.0</td>
</tr>
<tr>
<td>Other†</td>
<td>7</td>
<td>.6</td>
</tr>
<tr>
<td>Not Reported</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,197</td>
<td>-</td>
</tr>
</tbody>
</table>

*Data file retrieved from Institutional Research at Participants University (2017).

**Includes all instances where two or more race/ethnicities were indicated. Also, includes all Native Americans as there were too few cases (\( n = 10 \)) for a separate category.

***This includes non-relevant data (e.g. subject’s city) and were excluded from analysis.

†The Other category was excluded from statistical analysis due to limited representation.

high ACEs (defined as three or higher), were approximately one-fourth or less, with the highest concentration of high ACEs (25.8%) seen in the Spring 2016 Biology course.

**College Students and ACEs**

Approximately 59% of study participants described at least one or more ACEs, and 38% reported an ACEs score of two or more. High ACEs (three or more) within the sample population totaled 22%. ACEs scores for the sample population were then differentiated as low and high, and described within each independent variable group. Table 1 outlines the frequencies of high and low ACEs for variables describing the sample population. For race/ethnicity, high ACEs were most prevalent among Hispanic/Latino/a student’s (34.3%, \( n = 37 \)), while low ACEs
Table 3.

*Course Enrollment Among Sample Participants (N = 1,197)*

<table>
<thead>
<tr>
<th>Course</th>
<th>n†</th>
<th>%**</th>
<th>% High ACEs in each course*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2015 Biology</td>
<td>204</td>
<td>17.0</td>
<td>17.4</td>
</tr>
<tr>
<td>Spring 2016 Biology</td>
<td>285</td>
<td>23.8</td>
<td>25.8</td>
</tr>
<tr>
<td>Spring 2016 Human Development (100-Level)</td>
<td>288</td>
<td>24.1</td>
<td>20.5</td>
</tr>
<tr>
<td>Spring 2016 Human Development (200-Level)</td>
<td>256</td>
<td>21.4</td>
<td>19.7</td>
</tr>
<tr>
<td>Fall 2016 Biology</td>
<td>192</td>
<td>16.0</td>
<td>18.2</td>
</tr>
<tr>
<td>Not Reported</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: High ACEs percentages are calculated within each variable (course).
*High ACEs refer to an ACEs score of three or higher (Blodgett, 2012; Neider, 2018).
**Percentage total does not equal 100 due to rounding.
†Course enrollment does not equal participant total (n) due to multiple and dual enrollments.

were most prevalent among White students (80.5%, n = 627). For gender, the most frequently occurring high ACEs were demonstrated among Other (57.1%, n = 4). However, Other was excluded from the analysis as the variable category was not well represented. More female participants (24.9%, n = 208) demonstrated higher ACEs than male participants (15.1%, n = 52). First-generation participants (33.1%, n = 149) displayed higher ACEs than multigeneration participants (15.4%, n = 114), with multigeneration participants explaining the majority of low ACEs scores (86.4%, n = 625), as compared to first-generation participants with low ACEs (66.9%, n = 301).

Analysis of individual ACEs questions determined that the most prevalent ACEs categories for the study population were demonstrated in successive order, Divorce (36%), Mental Illness/Suicide (24.6%), Alcohol or Drug Abuse (21.8%), and Verbal Abuse (20.4%) (See Table 4). Of those participants where high ACEs were identified, the same four main ACEs categories were shown, but the order of prevalence differed slightly. For high ACEs
participants, the most predominant ACEs categories included, Divorce (83.3%), Alcohol or Drug Abuse (63.9%), Mental Illness/Suicide (63.3%), and Verbal Abuse (58.7%). However, the major ACEs themes for participants that identified as first-generation varied with the results for the total sample and high ACEs participants. For first-generation students, the most concerning ACEs categories included, Neglect and Homelessness (77.5%), Contact with CPS (63.4%), Parent Incarceration (61.3%), and Alcohol or Drug Abuse (55.8%).

Table 4.

ACEs Survey Question Distribution Among Sample Participants (N = 1,197)

<table>
<thead>
<tr>
<th>Question and ACEs Theme</th>
<th>n</th>
<th>%**</th>
<th>First-Gen %</th>
<th>High ACEs %*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Verbal Abuse</td>
<td>244</td>
<td>20.4</td>
<td>50.8</td>
<td>58.7</td>
</tr>
<tr>
<td>2. CPS Contact</td>
<td>82</td>
<td>6.9</td>
<td>63.4</td>
<td>23.9</td>
</tr>
<tr>
<td>3. Neglect/Homelessness</td>
<td>41</td>
<td>3.4</td>
<td>77.5</td>
<td>12.1</td>
</tr>
<tr>
<td>4. Emotional Abuse/Neglect</td>
<td>177</td>
<td>14.8</td>
<td>54.6</td>
<td>44.3</td>
</tr>
<tr>
<td>5. Parental Divorce</td>
<td>430</td>
<td>36.0</td>
<td>49.5</td>
<td>83.3</td>
</tr>
<tr>
<td>6. Witness Parental Abuse</td>
<td>122</td>
<td>10.2</td>
<td>48.8</td>
<td>35.7</td>
</tr>
<tr>
<td>7. Alcohol/Drug Abuse</td>
<td>261</td>
<td>21.8</td>
<td>55.8</td>
<td>63.9</td>
</tr>
<tr>
<td>8. Mental Illness/Suicide</td>
<td>295</td>
<td>24.6</td>
<td>44.2</td>
<td>63.3</td>
</tr>
<tr>
<td>9. Incarceration</td>
<td>156</td>
<td>13.0</td>
<td>61.3</td>
<td>45.8</td>
</tr>
</tbody>
</table>

Note: High ACEs and First-Generation percentages are calculated within each question. 
*High ACEs refer to an ACEs score of three or higher (Blodgett, 2012; Neider, 2018). 
**Percentage calculated from total sample population (N = 1,197).

**ACEs Among First-Generation Students**

**Defining first-generation and parent education.** As mentioned in Chapter Three, the survey instrument contained separate questions pertaining to first-generation status and parent educational level. While research questions pertained only to first-generation status, parent educational level data was utilized to perform a quality-assurance or “self-check” regarding how participants defined first-generation status. Frequency data was used to determine the appropriate use of “first-generation status” by comparing Parent Education data against First-
Generation variable data. First-Generation status for the sample population included the following: First-Generation (38%) and Multigeneration (62%). Table 5 depicts frequency comparison data for Parent Education.

As a reference, the participants’ university defines first-generation as having a parent or guardian that did not complete a bachelor’s degree and report that nearly 40% of the institution’s students are considered first-generation. Therefore, Parent Education was first evaluated utilizing a four-year degree or higher as a filter for defining first-generation status. For both Father and Mother, the percentages for earning a four-year college degree or higher (43.8% and 43.5%, respectively), as compared to the percentages for a two-year degree or less (53.2% and 55.5%, respectively), were contrary to the higher percentages of multigeneration participants and lower percentages of first-generation participants. Due to this discrepancy, Parent Education was then assessed using a two-year degree as the screening indicator for describing first-generation status. Once more, for Father and Mother, the percentages for earning a two-year college degree or higher (50.3% and 55.2%, respectively), as compared to the percentages for no college degree and less (46.8% and 43.8%, respectively), were found to be more aligned with the higher percentages of multigeneration participants and lower percentages of first-generation participants. The data is illustrated in Table 5.

While Parent Education percentages did not match the self-reported First-Generation status precisely, the percentages of Parent Education with a two-year degree or higher, more closely resembled the First-Generation variable. Parent Education inclusive of a two-year degree or higher similarly demonstrated a lower percentage of first-generation students as compared to multigenerational students. For this reason, study analyses were conducted with the position that
First-Generation referred to student participants whose parent(s) completed a two-year degree or higher.

Table 5.

Variance in Parent Educational Level Among Sample Participants

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Four-Year Degree or Higher†</th>
<th>Two-Year Degree or Higher†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Father</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Degree</td>
<td>519</td>
<td>43.8</td>
</tr>
<tr>
<td>No College Degree</td>
<td>631</td>
<td>53.2</td>
</tr>
<tr>
<td>Unknown</td>
<td>35</td>
<td>-</td>
</tr>
<tr>
<td>Not Reported</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Degree</td>
<td>519</td>
<td>43.5</td>
</tr>
<tr>
<td>No College Degree</td>
<td>661</td>
<td>55.5</td>
</tr>
<tr>
<td>Unknown</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Not Reported</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Totals and percentages are calculated within each variable group. Percentages excludes missing cases for each demographic variable.

*High ACEs refer to an ACEs score of three or higher (Blodgett, 2012; Neider, 2018).
†Indicates how “College” and “No College” was defined.

Comparing first-generation and multigeneration. Study results demonstrated higher ACEs among first-generation students as compared to multigeneration students. A Mann-Whitney U test (Mann & Whitney, 1947) was conducted to evaluate the hypothesis that a difference existed between ACE scores of first-generation and multigenerational university students. While variable means were on the lower end (ACEs score, $M = 1.51$) results of the analysis indicated that there was a statistically significant difference ($U = 123522.00$, $z = -7.97$, $p < .001$ two-tailed) between ACE scores in first-generation students as compared to multigeneration students, and therefore the null hypothesis was rejected. ACE scores for first-
generation students (Mean Rank = 694.32) were significantly higher than for multigenerational students (Mean Rank = 537.42).

Defining high ACEs as a score of three or higher, Figure 3 demonstrates the distribution of low ACEs and high ACEs among both first-generation and multigeneration students. The number of participants in each group is noticeably different and skewed toward multigeneration students with low ACEs, as well as higher ACEs among first-generation students.

![Figure 3. Distribution of ACEs Among Participants.](image_url)

Individually, first-generation participants scored higher than multigeneration participants on six of the nine ACEs survey questions (See Figure 4). Multigeneration participants scored higher only for the questions pertaining to divorce, witnessing the abuse of a parent, as well as the question addressing mental illness and suicide.
Predictions of College Student Academic Success

A multiple regression was conducted to determine whether race/ethnicity, gender, generation status, and ACEs score predicted participants’ academic success, represented by cumulative GPA (See Table 6). Race/ethnicity was represented as four dummy variables with White serving as the reference group. Participant GPA ($n = 869$) averaged 3.09 ($SD = .56$) for the selected sample. An analysis of standard residuals was carried out on the data to identify any outliers, which indicated that 18 participants needed to be removed (Std. Residual Min = -3.22, Std. Residual Max = 1.96). Tests to see if the data met the assumption of collinearity indicated
that multicollinearity was not a concern (Asian/Pacific Islanders, Tolerance = .95, VIF = 1.05; African American/Black, Tolerance = .96, VIF = 1.04; Hispanic/Latino/a, Tolerance = .86, VIF = 1.16; Other or More than One Race, Tolerance = .96, VIF = 1.04; Gender, Tolerance = .99, VIF = 1.02; Generation Status, Tolerance = .85, VIF = 1.18; ACEs Score, Tolerance = .93, VIF = 1.08). Additionally, the data met the assumption of independent errors (Durbin-Watson value = 1.97).

The histogram of standardized residuals indicated that the data contained approximately normally distributed errors, as did the normal P-P plot of standardized residuals, which demonstrated points that were not completely on the line, but extremely close (see Appendix C). The scatterplot of standardized predicted values showed that the data met the assumptions of homogeneity of variance and linearity (see Appendix C). The data also met the assumption of non-zero variances (Asian/Pacific Islanders, Variance = .09; African American/Black, Variance = .04; Hispanic/Latino/a, Variance = .09; Other or More than One Race, Variance = .08; Gender, Tolerance = Variance = .20; Generation Status, Variance = .24; ACEs Score, Variance = 3.30; GPA, Variance = .32).

**Overall model prediction.** Using the enter method, results indicated that race/ethnicity, gender, generation status, and ACEs score explained a significant amount of the variance in the participants’ GPA ($F(7, 861) = 5.37, p < .001$, $R^2 = .04$, $R^2_{Adjusted} = .03$), therefore the model was a significant predictor of participants’ academic performance (See Table 6). However, despite its significance, the model’s R-squared value of .04 explains only four percent of the variability of the response data around its mean. This limitation suggests that additional response variable variation is taking place that is not specifically explained by the linear model. When examining the variables individually, the analysis revealed that participants that identified as Asian/Pacific
Table 6.

*Standardized Regression Coefficients Predicting Academic Performance*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>-.096</td>
<td>.065</td>
<td>-.051</td>
</tr>
<tr>
<td>African American/Black</td>
<td>-.211</td>
<td>.102</td>
<td>-.070*</td>
</tr>
<tr>
<td>Hispanic/Latino/a</td>
<td>-.058</td>
<td>.069</td>
<td>-.030</td>
</tr>
<tr>
<td>Other or More than One Race</td>
<td>-.163</td>
<td>.070</td>
<td>-.079*</td>
</tr>
<tr>
<td>Gender (1 = female)</td>
<td>.090</td>
<td>.042</td>
<td>.071*</td>
</tr>
<tr>
<td>First-Generation Status</td>
<td>-.120</td>
<td>.042</td>
<td>-.103**</td>
</tr>
<tr>
<td>ACEs Score</td>
<td>-.023</td>
<td>.011</td>
<td>-.073*</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td></td>
<td>.03</td>
<td></td>
</tr>
</tbody>
</table>

$F$ = 5.37

Notes: Race/ethnicity was represented as four dummy variables with White serving as the reference group.

$n = 869$.

*p < .05  **p < .01.

Islander and Hispanic/Latino/a were not statistically significant predictors of GPA ($\beta = -.05$, $t(868) = -1.49$, ns; $\beta = -.03$, $t(868) = -.84$, ns, respectively). However, race/ethnicity identified as African American/Black ($\beta = -.07$, $t(868) = -2.07$, $p < .05$) and Other or More than One Race ($\beta = -.08$, $t(868) = -2.32$, $p < .05$) did significantly predict GPA. Additionally, Gender ($\beta = .07$, $t(868) = 2.13$, $p < .05$), First-Generation Status ($\beta = -.10$, $t(868) = -2.85$, $p < .01$), and ACEs Score ($\beta = -.07$, $t(868) = -2.12$, $p < .05$) were indicated as statistically significant predictors of cumulative GPA. Additionally, the constant was significantly different from 0 at the 0.01 alpha level.

**Variable prediction results.** Study participants belonging to the race/ethnicity categories of African American/Black and Other or More than One Race were predicted to have lower
GPAs than those participants belonging to the White race category. Participants that identified as Asian/Pacific Islander and Hispanic/Latino/a were not significant predictors of GPA (See Table 6). Specifically, for every unit increase in participants’ belonging to the Asian/Pacific Islander race/ethnicity category, there was a .096-point decrease in GPA, holding all other variables constant. The predicted GPA would be .096 points lower for Asian/Pacific Islander participants than White participants. Similarly, for every unit increase in participants’ belonging to the Hispanic/Latino/a race/ethnicity category, a .058-point decrease in GPA was expected, holding all other variables constant. The predicted GPA would be .058 points lower for Hispanic/Latino/a participants as compared to White participants. The coefficients for Asian/Pacific Islander (-.096) and Hispanic/Latino/a (-.058) were not significantly different from 0 because their p-values are 0.137 and 0.400, respectively, which were both larger than 0.05.

However, for every unit increase in participants belonging to the African American/Black race/ethnicity category, a .211-point decrease in GPA was predicted, holding all other variables constant. The predicted GPA was .211 points lower for African American/Black participants than White participants. Additionally, for every unit increase in participants belonging to the Other or More than One Race category, GPA was predicted to be .163 points lower. Therefore, participants that identified as More than One Race or a race/ethnicity Other than one previously specified, were predicted to have a GPA that was .163 points lower than White participants. The coefficients for African American/Black (-.211) and the Other or More than One Race (-.163) categories were statistically significant because their p-values of .039 and .021, respectively, were both less than 0.05.

As indicated above, Gender, First-Generation Status, and ACEs Score were statistically significant predictors for GPA. Male and First-Generation participants were predicted to have
lower GPAs than Female and Multigenerational student participants. Additionally, GPA was predicted to decrease with higher ACEs scores. Holding all other variables constant for Gender, a .090-point increase in GPA was predicted for females. The predicted GPA was .090 points higher for female participants than male participants. For every unit increase in ACEs Score, there was a .023-point decrease in the predicted GPA. Participants with higher ACEs Scores were predicted to have lower GPAs than participants with lower ACEs Scores. The coefficients for Gender (.090) and ACEs Score (-.023) were statistically significant because their p-values of .034 and .035, respectively, were both less than 0.05. With regard to First-Generation Status, every unit increase in students defined as First-Generation, GPA was predicted to be .120 points lower. That said, predicted GPA for this sample was .120 points lower for first-generation students as compared to multigeneration students. The coefficient for First-Generation Status (-.120) was statistically significant as its p-value of .004 was less than 0.01.

Summary

This chapter described the findings of this study focused on undergraduate university students with a history of ACEs. Results of the analyses were shared, relative to the two research questions of this study, including the relationship between ACE scores and first-generation status as well as prediction outcomes for student academic performance. The results clearly indicated higher ACEs among first-generation students, as well as college students considered diverse or underrepresented based on race/ethnicity and/or gender. Also revealed was prediction of decreased academic performance based on higher ACE score, and likelihood of first-generation status, gender, and several race/ethnicity categories. A more detailed summary and discussion of findings are presented in the next chapter. Chapter Five will also focus on the potential
implications for practice, limitations of the study, and finally, recommendations for future research.
CHAPTER FIVE: DISCUSSION

In 1998, Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, Koss, and Marks, transformed health care and medicine when their study exploring childhood adversities and health risk behaviors impacted understanding how early stress and household dysfunction negatively influence life-long health outcomes, quality of life, and decreased life-span. Their results described how as a person’s adverse childhood experience (ACE) score increased, so did their risk of disease, social, and emotional problems. ACEs were defined by 10 characteristics of events that may occur during an individual’s childhood, within three categories: childhood abuse, neglect, and household dysfunction. This original study demonstrated that people typically experience more than one type of adversity, with more than half of participants reporting at least one ACE, and one-fourth of participants reporting two or more ACEs (Felitti et al., 1998). Likewise, Anda et al. (2006) estimated the national prevalence of ACE scores of three or more to be approximately 22%.

It is known that stress and poor health outcomes are more likely to affect those with higher ACEs scores (Anda et al., 1999, 2006; Anda, Brown, Felitti, Dube, & Giles, 2008; Felitti et al., 1998, 2004; Karatekin, 2018; Lang et al., 2015). Individuals with higher ACEs are more likely to participate in risky behaviors and which are believed to be strategies for coping (Felitti, et al, 1998, Felitti & Anda, 2010; Larkin, Beckos, & Shields, 2012; Rothman, Edwards, Heeren, & Hingson, 2008; Strine et al., 2012). While these risky behaviors can negatively affect health, they can also directly and indirectly impact college success. Early adulthood is a period of development that has considerable consequences for life long health outcomes that are adopted during this time. In addition to the effects of past trauma, college students are vulnerable to stress simply due to the transitional nature of higher education (Taylor et al., 2014). These high
stress levels are believed to impact college student physical and mental health, as well as academic performance (Lee et al., 2009; Misra et al., 2000; Towbes & Cohen, 1996).

College student exposure to adverse childhood experiences have been associated with mental health disorders such as anxiety and depression (Wright et al., 2009). This coincides with the rising mental health problems seen throughout higher education (Beiter et al., 2015; Kitzrow, 2003; Kruisselbrink Flatt, 2013; Watkins et al., 2012; Zivin et al., 2009) as well as the current national mental health crisis (CDC, 2016). While research on ACEs has been prolific throughout the health and medical fields, studies focused on ACEs in higher education are just beginning to expand beyond limited current research. With increased knowledge and understanding of the prevalence and risks for college students with exposure to adversity in childhood, as well as the relationship between college student ACEs and academic performance, research findings can better serve practitioners in both higher education and public health to more aptly serve and support the needs of diverse current and incoming college students.

As previously mentioned, college students are especially susceptible to experience stress as they navigate their way through higher education (Taylor et al., 2014). Due to the increasing enrollment of college students that are underrepresented, nontraditional, and first-generation, as well as the alarming evidence-based connections between stress, trauma, and long-term health outcomes, it was crucial to explore how exposure to childhood adversity impacted college student performance. This quantitative descriptive and correlational study was conducted to understand and describe the characteristics and prevalence of the college students most at risk for high ACEs scores, as well as determine the association between college student ACEs and academic performance. The relationship between ACEs scores and first-generation status among
college students was investigated. Additionally, ACEs scores and demographic data, were used to determine prediction values for cumulative GPA.

This study drew from archival data stemming from online student survey responses ($N = 1,197$) and collected from an exploratory study investigating the relationship between ACEs and methods for which college students navigate stress (Neider, 2018). The survey instrument was included four separate adapted surveys, including participant demographics, the ACEs questionnaire (Felitti et al., 1998), the College Chronic Life Stress Survey (CCLSS) (Towbes & Cohen, 1996) assessment, as well as three reflective questions referencing college student transition. For the purposes of this study, the CCLSS and open-ended qualitative results were not accessed. The CCLSS questionnaire addressed acute stress, demonstrated by survey instructions and questions pertaining to stressful events taking place in a relatively short (e.g. monthly) timeframe. The CCLSS did not assess prolonged and toxic levels of stress. This study examined ACEs among college students and the specific emphasis and discussion of chronic, traumatic, and toxic stress, was both relevant and necessary. Therefore, the quantitative data utilized for this study included only the demographic data and the ACEs data.

Findings demonstrated 59% of students reported at least one ACE, 38% experienced two or more ACEs, and high ACEs totaled 22%. Mann-Whitney U results indicated higher ACEs among first-generation students as compared to multigenerational students. Multiple regression significantly predicted lower cumulative GPA for students identifying as first-generation, male, African American/Black, or multiple race/ethnicity, and students with high ACEs. This chapter highlights a discussion of the major study findings. Evidence-based practice implications are offered, followed by unanticipated findings, and concludes with recommendations for future research.
Discussion of Major Findings

On the basis of this study (and other studies with similar findings), ACEs among college student populations are representative of the general population and reinforce that ACEs are common. Study findings matched or exceeded that of Felitti et al. (1998). The original ACEs study (Felitti et al., 1998) demonstrated that people typically experience more than one type of adversity, with more than half of participants reporting at least one ACE, and one-fourth of participants reporting two or more ACEs. In this study, over half of participants (59%) reported experiencing at least one ACE, while more than one-third (38%) experienced two or more ACEs. Identical to the national estimates reported by Anda et al. (2006) was a study population prevalence of high ACEs (three or more) totaling 22%.

Additionally, the study results clearly indicated higher ACE scores among first-generation students, as well as college students considered diverse or underrepresented based on race/ethnicity (e.g. African American/Black and multiple races) and/or gender. Prediction analyses revealed decreased academic performance for students with higher ACE scores. Additionally, decreased cumulative GPA was also predicted for students belonging to the African American/Black and multiple race/ethnic groups, male students, and first-generation students.

Diversity and inequities in higher education. Despite increasing recruitment and enrollment of diverse and underrepresented college-aged students (Choy, 2001; Engle & Tinto, 2008; Ishitani, 2006; Newbold et al., 2010; Terenzini et al., 1996), the results of this study indicated that the majority of study participants were White (66.4%) and female (71%). With regard to age, 83% of the sample population was between the ages of 18 and 20, indicating more “traditionally” aged college students. Similarly, approximately 78% indicated a status of
“Freshman” or “Sophomore,” a characteristic associated with more traditional college students as compared to students that transfer from a two-year institution at a higher student status level.

Without a measure for assessing childhood socioeconomic status (SES), parental education and first-generation status were used as proxy indicators for SES (Karatekin & Ahluwalia, 2016). Based on current responses and comparisons of parental education and first-generation, study participants defined first-generation status in parallel with prior research (Redford & Hoyer, 2017), as students who have parents without any college education experience. It is likely that these students may have originated from a lower SES household as their parents do not have any college education. Therefore, study findings showed higher ACEs for participants considered underrepresented based on race/ethnicity and first-generation, and lower SES (based on proxy).

**ACEs among first-generation students.** In this study, ACE scores for first-generation students were significantly higher than for multigenerational students. This is especially important to consider given the increasing rates of first-generation student populations in higher education (Orbe, 2004). While studies show that 24% to 34% of college students are considered the first in their family to attend postsecondary education (Choy, 2001; Engle & Tinto, 2008; PNPI, 2018; Redford & Hoyer, 2017), this study yields similar results with 38% of participants reporting a first-generation study status. These statistics are also comparable with the participants’ university, reporting that 40% of the total campus population was considered first-generation.

Noteworthy however, was the discrepancy in the way that the participants and their university campus defined first-generation status. The participants’ university defined first-generation status as a student having a parent or guardian that did not complete a bachelor’s
degree. Using the participants’ university definition as a reference, differences between self-reported Parent Education level and First-Generation status were evaluated to more accurately understand how participants defined first-generation identification.

In this study, participants that had parent(s) with a two-year degree did not identify themselves as first-generation. Participant data parallels that of the NCES, who state that “first-generation college students are students who enrolled in postsecondary education and whose parents do not have any postsecondary education experience” (Redford & Hoyer, 2017, p.3).

Interesting however, was that the NCES brief went on to specify that the report was authored describing “those students with at least one parent with a bachelor’s degree or a higher level of educational attainment” (p.3) as multigenerational students. Therefore, current study findings aligned with the general definition offered by the NCES (Redford & Hoyer, 2017), but differed from that of the specific NCES report and definition portrayed by the participants’ university that used a bachelor’s degree as a filter. This study illuminates that while first-generation college student research is prolific, the way in which first-generation status is evaluated varies, not only from study to study, but within institutional systems. Based on study findings, a discrepancy existed between the way in which scholars define first-generation status and the perception of students who may or may not have identified as first-generation.

**College student academic success.** ACEs scores are strongly correlated to academic performance in the K-12 setting (Blodgett, 2012), and accordingly, academic performance in higher education is also affected by ACEs scores. Significant predictors of academic success in this research were determined to be compatible with characteristics often used to describe students as underrepresented. In this study, decreased cumulative GPA was predicted for African American/Black students and students identifying as multiple race/ethnicities as
compared to White students. Lower GPA was also predicted for first-generation students and students with high ACES (three or more childhood adversities). Male students were also predicted to have declines in GPA.

The present study indicates a similar portrait of well-documented concerns regarding academic performance in underrepresented students. In this sample population, African American/Black students and students of multiple race/ethnicities were predicted to have lower GPAs than their White peers. This finding parallels a historical prevalence of educational barriers among students of color, often rooted in discrimination and oppressive racial climates (Allen & Jewell, 2002; Hurtado et al., 2010). These obstacles include poverty, racism, lower high school GPAs, working more hours during high school and expectations to work full-time during college, as well as limited diverse role models and faculty (Hurtado et al., 2010; Mercer & Stedman, 2008).

As compared to White students, racially diverse students often struggle academically when admitted college (Hurtado et al., 2010; Parker, 2012), possibly resulting from a higher likelihood of attending limited resource high schools, arriving less academically prepared for college-level studies, and with more financial constraints (Mercer & Stedman, 2008; Parker, 2012). Also concerning is that compared to other students of color, African American students have had increased difficulties with racial conflict on college campuses and pressure to conform to stereotypes (Ancis, Sedlacek, and Mohr, 2000). Demonstrating the basis for these barriers, the NCES reported in 2013 that African American/Black children were the highest racial/ethnic group living in poverty and single-parent households (Musu-Gillette et al., 2016). African American/Black adults had the highest unemployment rates, including those individuals who did not complete high school, but also those who had a bachelor’s degree or higher. Similarly,
African American/Black populations demonstrated the lowest median annual earnings as compared to similarly educated peers of other race/ethnicities. The lowest earnings were present among African American/Black adults without a high school education, as well as those who had earned a bachelor’s degree or higher (Musu-Gillette et al.).

The high school dropout rate for African American/Black students remains higher than for White students and the White-Black college enrollment gap has not differed substantially in the past decade (Musu-Gillette et al., 2016). For full-time undergraduates, African American/Black students received both the highest percentages of grants and student loans as compared to any other racial/ethnic group, and took the longest to graduate. The lowest percentages of degrees earned in STEM fields are present for African American/Black students and may be explained by the persistent White-Black achievement gaps in reading and math (Musu-Gillette et al.). Consistent with the research, it is reasonable that African American/Black students in this study population would demonstrate lower cumulative GPA predictions than their White peers.

In addition to racially/ethnically underrepresented students, female students in the current study were predicted to have higher GPAs than their male counterparts. Results aligned with previous research suggesting gender differences in college academic endeavors (Jones et al., 2016; Misra & McKean, 2000), and females demonstrating increased efficiency with time management (Misra & McKean, 2000).

In this study, the race/ethnicity identifications Asian and Hispanic/Latino/a were not found to be significant predictors of academic success. Although, participants that identified as Hispanic/Latino/a did have the highest prevalence of high ACEs. These results coincide with previous literature regarding weak educational progress among Latino/a students, an outcome
associated with low SES, limited expectations of academic success, lack of college preparation, and structural barriers (Solórzano et al., 2011). Additionally, with elevated high school dropout rates and the lowest percentage of students pursuing and completing college degrees nation-wide (Musu-Gillette et al., 2016), often the result of poverty, cultural stereotypes, as well as balancing full-time employment and familial responsibilities in addition to school (Solórzano et al., 2011), it is logical that students of Hispanic/Latino/a origin would have the highest prevalence of high ACEs.

**College students and ACEs.** It is known that ACEs and stress are interconnected and negatively impact health and academic performance. While many people may experience ACEs, some experience it more frequently than others. In this study, individual ACEs were investigated to learn more about what specific categories of childhood adversity effected college students (Table 4). Overall, the most prevalent ACEs categories for the study population included, Divorce (36%), Mental Illness/Suicide (24.6%), Alcohol or Drug Abuse (21.8%), and Verbal Abuse (20.4%).

Of those participants where high ACEs were identified, the same four ACEs categories were most prevalent, however the order differed slightly. For high ACEs participants, the most predominant ACEs categories were, Divorce (83.3%), Alcohol or Drug Abuse (63.9%), Mental Illness/Suicide (63.3%), and Verbal Abuse (58.7%). However, for first-generation students, the major ACEs themes were different as compared to the results from the total sample population and high ACEs participants. For first-generation students, the most concerning ACEs categories included, Neglect and Homelessness (77.5%), Contact with CPS (63.4%), Parent Incarceration (61.3%), and Alcohol or Drug Abuse (55.8%).
Alcohol or Drug Abuse is the single most common factor among the college student participants, and is also the most concerning as this compares with previous literature regarding alcohol or drugs as a coping strategy for college aged students (Dube, Anda, Felitti, Edwards, & Croft, 2002) as well as the prevalence of ACEs related alcohol problems in adulthood (Felitti, et al., 1998). In addition to chronic disease, individuals that experienced ACEs as children are more likely to suffer from anxiety and depression, and are more likely to use alcohol, drugs, and tobacco (Felitti et al., 1998; Rothman, et al., 2008). The number of ACEs is directly correlated to adult alcoholism. The higher an individual’s ACEs score, the greater the risk of alcoholism (Dube et al., 2002). Additionally, ACEs were found to be an underlying source of chronic depression, in that approximately 60% of women with four or more ACEs reported a lifetime history of depression (Felitti et al., 1998).

The authors suggested that these findings may be attributed to ACEs being associated with risky behaviors such as smoking, overeating, drug and alcohol use and abuse, risky sexual behavior, and suicide attempts (Felitti et al., 1998). Therefore, Felitti et al. (1998) hypothesized that these risky behaviors were coupled with coping strategies as a way to alleviate the pressure of trauma related stress. Rothman, Bernstein and Strunin (2010) confirmed this finding in their investigation of ACEs that were correlated with alcohol use before the age of 15, which is a key factor in substance dependence. Those individuals with ACEs were more likely to use alcohol and drugs as a form of coping, as compared to social drinking or using. Similarly, another study reported adolescent alcohol use as a way for youth participants to feel less lonely, as a way to cope, and because they felt hopeless (Rothman, Bernstein, & Strunin, 2010).

In addition to the effects of past trauma and ACEs, college students are more susceptible to stress simply due to the transitional nature of higher education (Taylor et al., 2014), and even
more so for first-generation students (Atherton, 2014). College students with ACEs are particularly susceptible to negative methods of coping with stress, including smoking, alcohol abuse, and drug abuse. In fact, in 2013, the ACHA reported that 64.8% of college students had used alcohol within the last 30 days. High stress levels and maladaptive coping mechanisms impact college student physical and mental health, as well as academic performance (Lee et al., 2009; Misra et al., 2000; Towbes & Cohen, 1996).

The relationship between ACEs and substance abuse in college students is significant (Arnekrans et al., 2018; Forster, Grigsby, Rogers, & Benjamin, 2018). Likewise, PTSD associated with ACEs has also been linked to alcohol abuse among college students (Hannan, Orcutt, Miron, & Thompson, 2017), however, Brett, Espeleta, Lopez, Leavens, and Leffingwell (2018) discovered that mindfulness mediated the risk of alcohol use and related consequences. In their study, students with a history of ACEs were initially found to have low levels of mindfulness, but following targeted alcohol abuse interventions emphasizing mindfulness skills reduced alcohol consumption and related outcomes (Brett et al., 2018).

**Theoretical Implications of the Study**

As presented in Chapter Two, Bourdieuan (Bourdieu & Passeron, 1977) cultural capital describes inherited generational traditions of cultural background, knowledge, disposition, and skills, including “ways of talking, acting, and socializing, as well as language practices, values, and types of dress and behavior” (McLaren 1994, p. 219). Taken at its word, Bourdieu’s (1977, 1990, 1994) framework of cultural capital would be a very acceptable way of describing the generational familial abuse and dysfunction that occurs with regard to ACEs. However, Bourdieu’s theory of cultural capital is typically restricted to upper class societal power, in that it “provides the means for a non-economic form of domination and hierarchy, as classes
distinguish themselves through taste” (Gaventa, 2003, p. 6). In this way, Bourdieu’s theory of cultural capital has an inverse relationship with ACEs. In fact, study findings support Bourdieu’s theory in that students without his defined cultural capital, such as first-generation and underrepresented participants, had higher ACEs and lower GPA predictions.

However, some scholars consider cultural capital as less defined and instead, an effective method for upward mobility (DiMaggio & Mohr, 1985; Zweigenhaft, 1993). Others believe that attending and graduating college is a good strategy for obtaining cultural capital (Walpole, 2003). Based on this rationale and agreement with Banyard and Cantor (2004), college would be an ideal time to address and counteract the negative (possibly generational) effects of ACEs.

Cultural capital, according to Bourdieu (1977, 1990, 1994), explains how individuals can relate, navigate and be members of a social structure, with hopes of reproducing the existing social structure. Individuals exposed to childhood adversity would likely not wish to adopt their existing dysfunctional social structure, confirming that college, especially for first-generation students, may be an ideal time to address the impacts and consequences of ACEs, and improve the future outlook for students and their families (Banyard & Cantor, 2004).

Yosso’s (2005) theory of Community Cultural Wealth may have been receptive to study findings, however not enough information was available in this study to determine the extent of cultural wealth. Exposure to ACEs would fall within the context of Yosso’s familial capital as ACEs questions referred to experiences in the family home. However, many factors contribute to Yosso’s (2005) theory and are important in determining the true value of cultural wealth. For example, participants that experienced ACEs may have gained other forms of capital, such as aspirational (or resiliency or hope of a better future), resistant (skills gained in the face of oppression), navigational (enduring hostile or stressful environments), to name a few. However,
for the purposes of this study, all necessary factors for assessing cultural wealth were not investigated. While the literature on the negative health impacts of ACEs is vast, there is little or no research on these skills and strengths gained from chronic adversity. Examining ACEs through the lens of Yosso’s Community Cultural Wealth theory would be an exciting way to understand a comprehensive portrait of the strengths, weaknesses, benefits, and consequences of how high ACEs impact an individual. Yosso’s (2005) theory may even be an effective method for researchers to more fully assess resilience in ACEs individuals.

**Explanation of Unanticipated Findings**

The utilization of archival survey data was easily accessible and assisted with expediting the data analysis of this study. However, there were limitations in the study design and data collection processes that created challenges while forming a full illustration of the archival study. While serving as a mechanism to be more objective through the use of existing data, procedures and processes regarding research design and study implementation details were more elusive than in instances where the researcher experiences them personally. A primary example included survey response rate. Enrollment was not well documented which created a barrier to calculating a survey response rate.

**Survey development.** The study’s online survey questions were not coded to be mandatory prior to moving to the next page and set of questions. Therefore, there were sections of missing data. The researcher learned this was done intentionally as it aligned with human subjects’ requirements regarding participants being able to stop the survey at any point. However, in the Qualtrics online survey system, a third option is available. The survey questions may be coded so that participants are not required to complete the questions prior to progressing in the survey, but Qualtrics will alert the user with a reminder about questions that were not
completed. When this option is utilized, participants that do not wish to answer may do so and progress through the survey accordingly, as well as reducing the number of unintentionally skipped questions and missing information.

The survey question pertaining to race and ethnicity was particularly challenging. As a text-entry based question, it posed data analysis challenges in that race/ethnicity categories were subject to the researcher’s discretion and coded accordingly prior to running the multiple regression. The text-entry nature of the question made for some interesting findings in that a number of participants listed their current city of residence instead of their race. For this study, the “N/A” category included these types of entries, as well as answers such as “yellow” and “human,” and therefore were excluded from the analysis. Perhaps this was intentional on the part of the participant or perhaps there was confusion about what the question was addressing. Either way, an opportunity for more information was missed. If discrete categories were offered (e.g. NIH’s Racial and Ethnic Categories and Definitions for NIH Diversity Programs and for Other Reporting Purposes, guidelines (National Institutes of Health [NIH], 2015) data analysis could be more consistent and less subjective on the part of the researcher. More importantly, an option for not wishing to disclose race/ethnicity information may have been valuable in study findings.

Assessment findings for first-generation and parent education data were surprising, as well as the need to determine the way in which participants defined or identified with each. As mentioned earlier in this chapter, study participants took first-generation student status to mean students with parents without any college degree. In this study, participants that had parent(s) with a two-year degree did not identify themselves as first-generation. This is contrary to some literature surrounding first-generation students, as well as the participants’ university who use a
four-year degree as the filter for first-generation status. Regardless, literature supports both definitions of first-generation students, and as such, study findings align with previous research (Redford & Hoyer, 2017). In their brief, the NCES defined first-generation as “college students are students who enrolled in postsecondary education and whose parents do not have any postsecondary education experience” (p.3), however, the brief went on to specify that the report was specifically focused “on those students with at least one parent with a bachelor’s degree or a higher level of educational attainment” (p.3). Therefore, current study findings match that of the NCES first-generation broad definition (Redford & Hoyer, 2017), but differ in how NCES statistics have been reported, and diverge from the definition of first-generation status conveyed by the participants’ university.

**Specific data issues.** There were several individual cases where GPA data was available, but did not align with any participant survey data. For this reason, these cases could not be coded as it could not be connected with enrollment. While participants took the online survey themselves, GPA data was provided by university records. Speculation for how this may have occurred can likely be attributed to students who may have dropped the course prior to survey completion, or perhaps identification information was not provided by the participant in order to match GPA records with survey responses.

As mentioned in previous chapters, the initial survey (Fall 2015) was a pilot and did not ask participants to provide identification information that could later be used to connect survey responses to GPA. Consequently, the data set examined in this study utilized partial information with regard to GPA. Subsequent iterations of the survey did ask for participant identification and accompanying data included the collection of participant GPA. However, participants had the option to include (or exclude) their identification information and missing GPA information was
visible throughout the data sample for this reason. If a student did not provide their identification information in any version of the survey, GPA was unavailable. Without GPA, the case was excluded from the prediction model.

**Duplicates.** As mentioned in Chapter Four, the original raw data set included 48 duplicate cases that were merged and then removed. While these cases were excluded from analyses, unexpected and intriguing characteristics were noted during duplicate data merging. The researcher noted that duplicates existed in cases where participants were enrolled in more than one class as well as multiple survey responses for one participant enrolled in just one course. Participants may have been enrolled in multiple classes due to concurrent enrollment (e.g. the courses fulfilled university core curriculum requirements so concurrent enrollment in the same or different terms was possible), as well as from students who repeated the course (e.g. whether they failed, withdrew, or wanted or needed a better grade). Since the survey was administered during week five of the term, the first exam in most classes had taken place and participants would know if they wanted to proceed in or withdraw from the course. When a student retook the course, the survey was administered again.

For some instances where the survey was completed multiple times, differences in ACEs score for the same participants were noted. For several cases where the survey was completed in different terms, parental education level changed (e.g. perhaps a parent completed a degree? Or a participant was unaware of parent education and then became aware?), and differences in how the participant answered the First-Generation question were observed. Due to the limitation in identifiers in the Fall 2015 pilot data, duplicates were unable to be detected. Future investigation pertaining to the intriguing nature of the duplicate cases may prove to be a fruitful sample for follow-up focus groups in subsequent studies.
**Resiliency.** When researching childhood adversity, it has become more important to also measure resiliency as well. Some would argue that investigating childhood adversity without also studying resiliency does not provide a full picture of the individual - for both the traumas that were endured as well as any positive protective or buffering factors that were taught or learned. Poole, Dobson, and Pusch (2017) demonstrated the importance of resilience to moderate the effects of ACEs and depression, while Logan-Greene, Green, Nurius, and Longhi (2014) conducted a large-scale study to determine that ACEs related resilience resources enabled protective and buffering strategies that were sustainable through old age. Resilience resources included social and emotional support, life satisfaction factors, and sleep quality.

Alternatively, resiliency embraces the concept of “bouncing back” after a trauma or stressful event. For those students for which childhood adversity was prevalent or high (e.g. Three or more ACEs), “bouncing back” to something one is unfamiliar with is a foreign concept. For this reason, when resiliency is measured with ACEs, and both the negative and positive experiences in a person’s life are demonstrated, it still may not provide the comprehensive picture that health professionals and scholars seek.

As stated previously, social capital (Bourdieu, 1977, 1990, 1994) or cultural wealth (Yosso, 2005), may be best considered during college, as it is a place of transformational learning. Therefore, it may be valuable to address the protective and buffering factors of resilience, together with the cultural and community strengths derived from Yosso’s model. While resiliency measures may not adequately address the diversity of protective and buffering factors, community cultural wealth can bridge the gaps for a comprehensive representation of the “whole” student.
Notes from the researcher. Unanticipated, but not surprising, was the need for the researcher to utilize an interdisciplinary approach to exploring literature and reviewing previous findings related to ACEs. While ACEs is a rather new paradigm in higher education, literature was more widely accessible in the fields of K-12 education, health education and promotion, psychology, social work, health care and medicine, public health, as well as holistic and complementary and alternative medicine. The interdisciplinary approach to gather a firm and comprehensive understanding of the impacts of ACEs and stress on college students, is perhaps a valuable indication of the most effective strategy for developing solutions.

The concluding unexpected finding was the significant, yet beneficial, amount of personal awareness, growth, and healing the researcher experienced throughout the entirety of the study process. As a way to gain a sound understanding of the research, the author completed the ACEs questionnaire, and was astonished that personal findings opened up a new awareness and understanding for the relevant connections of generational and familial chronic disease. A review of the literature led to an assessment of the researcher’s personal and professional life and through this reflection, emerged an evidence-based approach to parenting, working, and living in an effort to facilitate improved health and well-being. At times the research was very triggering, leading to both reflexivity and catharsis in the development of this document. Meditation and mindfulness were utilized regularly as an intervention to focus on academic writing and mitigate psychological barriers caused by depression and imposter syndrome (Langford & Clance, 1993), a phenomenon that is familiar to first-generation students.

With a comprehensive and transformative understanding of ACEs and toxic stress, the researcher reaffirmed a personal mission of what it means to wear two hats (Wallerstein & Freudenberg, 1998) as a health educator and educational leader. The author postulated that if
“our ultimate aim as researchers and educators is to serve people’s well-being” (Hostetler, 2005, p.16), perhaps the most strategic method is to start with ourselves.

**Implications for Practice and Rationale**

This research yields several important implications for practice. The first is to prioritize reducing stress. College is a stressful time, especially so for those with ACEs and a history of toxic stress, and access to information and resources on how to both cope and manage stress is essential. Secondly, postsecondary institutions and leaders need to acknowledge the profound shift in mental health needs and rising national mental health crisis. Accessible and therapeutic mental health centers and crisis response plans are critical. Finally, higher education is in a unique situation to increase awareness and provide education, resources, and interventions around ACEs, mental health, substance abuse, abusive relationships, stress reduction, coping strategies, and other issues that impact health, academic and career success, and well-being.

Although a single study cannot provide a sound basis for the practice of ACEs among college student populations, this study (and other studies with similar findings) would suggest that it is not necessary to target or restrict interventions to students with ACEs, as so many people in the population are affected by childhood stress, trauma, and mental health concerns (Felitti, et al., 1998). Efforts to mitigate the harmful effects of chronic stress, trauma, and dysfunction as well as interventions that promote resilience, self-healing, and stress management are practical for all students. These approaches will be particularly helpful for students who have experienced ACEs, but will also benefit first-generation, underrepresented, and other vulnerable student populations that exhibit added struggle and stress during college, often as a result of chronic stress before entry. Regardless of a student’s income or background, programs and
interventions that support mental health care and promote supportive resources are good practice for postsecondary institutions, and will be invaluable to students with ACEs.

Stress interventions are needed for college students (Karatekin, 2018), and given that students with ACEs are particularly susceptible to negative methods of coping with stress, including alcohol and drug abuse, direct instruction of stress reduction techniques could have a large and meaningful impact. A public health perspective may be ideal for addressing trauma and stress (Magruder, Kassam-Adams, Thoresen, & Olff, 2016), and due to the widespread prevalence of ACEs, preventative stress measures across an array of settings and professions is optimal (Nurius et al., 2016).

Mindfulness meditation has proven effective to help college students cope with stress and anxiety (de Bruin, Meppelink, & Bögels, 2015; Bamber & Schneider, 2016), improve cognitive functioning and resilience (Zenner, Herrnleben-Kurz, & Walach, 2014), as well as better manage stress-related drinking problems among college students (Bodenlos, Noonan, & Wells, 2013). Skill-based programs with supervision have proven an effective strategy for addressing college student mental health concerns (Conley, Durlak, & Dickson, 2013). Interventions included mindfulness and cognitive behavioral training and were determined to be most successful when conducted as a class. These findings demonstrate an opportunity for mindfulness-based skills trainings to be most valuable when implemented in higher education and classroom settings (Conley et al., 2013). This finding is also important due to many students being unable to take advantage of college support resources due to the challenges they experience when first entering college (Bridges et al., 2008).

A report regarding the practice of meditation in higher education was developed to inform postsecondary institution administrators and provide evidenced-based solutions to the
growing need for trauma informed care and mental health solutions for college students (Bush, 2011; Shapiro, Brown, & Astin, 2008). The report was designed to support academic achievement goals, mental health concerns due to college related stress and ACEs, as well as enrich the education and well-being of the “whole” person (Shapiro et al., 2008). In their report, Shapiro, Brown, and Astin (2008) asserted that meditation facilitates cognitive processing, enhances learning capacity, and fosters stress resilience, as well as personal well-being. Despite the fact that well-being can be predicted by stress, the most significant factor contributing to college student well-being is self-compassion (Neely, Schallert, Mohammed, Roberts, & Chen, 2009), and can be enhanced through mindfulness (Keng, Smoski, & Robins, 2011). College faculty and administrators have also had positive results when practicing mindfulness as a resource for strengthening their leadership methods (Davis, 2014).

Mindfulness-based stress reduction (MBSR) (Kabat-Zinn, 2003) has been proven to be useful in reducing social anxiety and perceived stress among college students (Ștefan, Căpraru, & Szilágyi, 2018), as well as adults (Chiesa & Serretti, 2009), and both physical and mental health care providers (Praissman, 2008; Schure, Christopher, & Christopher, 2008). Comparable studies measuring the effectiveness of 8-week MBSR interventions for both students and health care professionals, yielded similar results (Shapiro, Astin, Bishop, & Cordova, 2005; Shapiro, Brown, & Biegel, 2007; Shapiro, Schwartz, & Bonner, 1998). Findings demonstrated reduced depression (Shapiro et al., 1998) and stress, enhanced quality of life, a greater capacity for self-compassion (Shapiro et al., 2005) and empathy (Shapiro et al., 1998), as well as increased mindfulness, and less anxiety and rumination (Shapiro et al., 2007). In addition to decreases in stress, authors found that the MBSR and meditation interventions were effective in fostering forgiveness among college students (Oman, Shapiro, Thoresen, Plante, & Flinders, 2008).
Mind-body medicine strategies such as meditation, yoga, and Qigong have led to positive changes in mental, emotional, spiritual, and interpersonal well-being (Schure et al., 2008). In this qualitative study, college students reported being sick less often, they had lower levels of anxiety and depression, felt a greater sense of purpose, and an increased capacity for empathy and compassion of others. In a 6-week mind-body medicine training designed for college students to focus on the relaxation response and learn cognitive behavioral skills, results demonstrated significant reductions of distress, anxiety, and perceived stress level (Deckro et al., 2002). Similarly, in a 16-week cognitive behavioral stress management program for college students, Baghurst and Kelley (2014) discovered that the intervention significantly reduced students’ perceived stress, test anxiety, and personal burnout levels.

Central to ACEs and stress management interventions are mindfulness-based mind-body methods (MBMB). MBMB strategies are more effective and a more appropriate choice than resilience methods (or trauma-informed care) alone, for addressing the emotional trauma and chronic stress that stems from ACEs (Bethell, Gombojav, Solloway, & Wissow, 2016). There is an increase of evidence supporting academic and life success through trauma healing, and self-regulation of stress, emotions, and behaviors. To reinforce the value of these strategies, the authors stated that the American Academy of Pediatrics is developing a clinical practice policy statement on utilizing mind-body methods (Bethell et al., 2016). Mind-body techniques are low-cost, individually unique, and personal. MBMB is not a one-size fits-all intervention with standardized goals. Instead of focusing on explicit strategies or specific skills to master, MBMB methods focus on self-soothing exercises and a mindful presence (e.g. self-awareness of breathing, emotions, and non-judgmental thoughts). MBMB interventions offer a number of strategies so that something works well for everyone, regardless of income, background, or
presence or degree of stress. These evidence-based methods can reduce conditions such as stress, anxiety, depression, ADHD, PTSD, and have been known to help alleviate physical pain, improve health and social behaviors, as well as increase academic attendance and participation (Bethell et al., 2016). MBMB offers education, healing, and wellness for all people.

**Recommendations for Further Research**

Literature on the negative impacts of ACEs are prolific and disconcerting. Childhood adversity, toxic stress, and trauma clearly effect individuals well into adulthood and in harmful ways. Also, widely documented is the transformational and highly stressful experience that college students endure (D’Zurilla & Sheedy, 1991; Kadison & DiGeronimo, 2004; Pierceall & Keim, 2007; Ross et al., 1999; Towbes & Cohen, 1996), and especially so for underrepresented and first-generation students (Atherton, 2014). Instead, future research needs to explore interventions and coping strategies that may be used to both mitigate or heal current and chronic stress, hardship, and trauma in college students.

Correspondingly, the literature concerning demographic attributes of underrepresented, nontraditional, and first-generation students are also vast and prevalent, yet the unique causes of their stress or coping styles are not as readily available. In order to better serve the growing diversity in higher education, and similarly address the concerns for retention (Benseman et al., 2006), it is essential to understand the array of student needs and adapt services, resources, retention efforts, and campus climate to equitably accommodate all students. It is known that early adulthood is a period of development that has considerable consequences for life long health outcomes that are adopted during this time. Together, with the commonality of ACEs and strong influence of ACEs on maladaptive coping strategies, understanding and addressing the needs of the “whole” college student have never been more critical.
Based on study findings, additional research seems needed to explore the multiple forms of stress among college students in relation to allostatic load or sequelae. In order to develop a comprehensive understanding of the stress that students experience and how it might be further impacted by ACEs, the relationship between ACEs and the CCLSS should be examined. Additionally, future investigation regarding the longitudinal outcomes of academic performance and retention with regard to ACEs and college student stress is crucial. A firm understanding of retention and time to degree completion among first-generation students and students with high ACEs is necessary for adapting effective student support services. Documenting the voices that remain unheard, or those students who began their postsecondary journey but were unable to finish, may be invaluable for institutions and leaders to better understand how to address diverse student needs. Further investigation into the prevalence and risk factors of ACEs for graduate students is also needed to understand and address student needs.

This study utilized the enter method to conduct multiple regression prediction analyses. As a result, this type of regression model was only able to reflect the individual variables that were entered, therefore, academic success prediction outcomes were reported individually, by variable. It would be advantageous to explore the data using stepwise or hierarchical regression to more comprehensively understand the relationships between high ACEs, first-generation status, race/ethnicity, and gender. With regard to gender, the most frequently occurring high ACEs in this study were demonstrated among the identification of Other. However, Other was excluded from the analysis as the variable category was not well represented, yet further investigation is needed to recognize the unique adversities and traumas experienced by students that identify as something not captured in the binary male/female categories most frequently used in demographic data collection.
As noted previously, it is possible that this study did not represent the entire university system, inclusive of smaller affiliated regional campuses. Additional research is needed at the other university campus’ as well as at other institutions. It is likely that ACEs results will differ with a more diverse campus population. In fact, a researcher might hypothesize that high ACEs scores would be more prevalent at the regional campus’ as compared to the larger institution.

Additional research is also needed to describe ACEs among college students, particularly with regard to SES. Previously, Walpole (2003) unexpectedly determined that successfully completing college did not increase lower SES students’ cultural capital to a level considered equivalent to their peers. Later, Sapolsky (2018) argued that low SES and inequality may lead to diminished learning, and could be a major contributing cause of poverty. If students with lower SES and impaired pre-frontal cortex function are known to struggle throughout higher education, particularly those with high ACEs, as well as first-generation and underrepresented students, a greater understanding of the relationship between these potentially harmful outcomes is needed. Low SES and high ACEs are not necessarily mutually exclusive; however, possible impaired learning is associated with each. Interventions and services may be more effective with increased knowledge about the similarities and differences between each factor.

Finally, documented approaches for how to interrupt the health-compromising trajectory of ACEs (Chandler, Roberts, & Chiodo, 2015) through resilience and mindfulness and meditation are becoming more prevalent throughout higher education. What is not prolific, however, is the most effective methods for implementing college-based resilience programs or the best practices (e.g. how much and how often) for integrating meditation in order to achieve desired academic outcomes (Shapiro et al., 2008). However, ACEs related interventions are often developed and implemented without the voices of the people effected (Vickers & Wells,
In order for resilience related solutions to be effective, future research regarding best practices should also include the opinions of the college students themselves.

**Conclusion**

As a national public health concern, Felitti et al. (1998) have documented the prevalence of ACEs in the population. Mental health has become an increasing national health crisis, and is in part attributable to childhood trauma (Felitti et al., 1998; Lang et al., 2015). Simultaneously, the ACHA (2013) reports that stress is the greatest barrier to student academic achievement. Associated with that stress and related anxiety, are low course grades (Struthers et al., 2000), decreased health outcomes (Shields, 2001; Svenson & Campbell, 1992), financial pressures, and lack of time management skills (Misra et al., 2000). ACEs are also associated with mental health disorders such as depression and anxiety and these disorders are highly related to substance abuse (Felitti et al., 1998).

With the commonality of ACEs, the increasing rates of mental health concerns, the stress that college brings, and maladaptive coping strategies (such as alcohol or drugs) strongly associated with all of these factors, it is imperative that higher education leaders take action to advance their understanding, as well as address concerns, and support students in improving their health, well-being, and position students for academic and career success. This chapter briefly reviewed the study design, highlighted key findings and research interpretations, and offered a discussion on how outcomes fit within the context of the existing body of knowledge. Evidence-based implications for increased ACEs awareness, mindfulness-based mind-body education, and resilience-focused support services in higher education were presented as well as recommendations for future research.
Higher education leaders with vision for making a difference and impacting the world in a better way are crucial for students to receive the education and equitable resources they deserve (Theoharis, 2007). As a transformational and knowledge attaining entity, higher education is an ideal environment to address students’ past traumas, provide adequate resources, strategies, and support, so that students may apply a strengthened wisdom to improve their academic and career success, quality of life, and their generational family tree. Addressing ACEs in higher education has important implications for healing toxic stress, reducing college student stress, and improving academic performance. However, by disrupting the ACE to illness trajectory (Chandler et al., 2015), college interventions also have the capacity to make significant impacts in the fields of higher education and public health, enrich communities, and transform lives.

*Educating the mind without educating the heart is no education at all.* -Aristotle
REFERENCES


Mann, H. B., & Whitney, D. R. (1947). On a test of whether one of two random variables is stochastically larger than the other. *The annals of mathematical statistics, 50-60.*


Neider, X. (2018). *Stressors, buffers, balance, and hope: How universities can support students with high adverse childhood experiences*. Unpublished manuscript, Washington State University, Pullman, WA.


Smith, N. (2013). *First generation college students.* Retrieved from:


APPENDIX A

Adverse Childhood Experience (ACE) Questionnaire
Finding your ACE Score 10/24/06

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household often …
   Swear at you, insult you, put you down, or humiliate you?
   or
   Act in a way that made you afraid that you might be physically hurt?
   Yes  No  If yes enter 1 _______

2. Did a parent or other adult in the household often …
   Push, grab, slap, or throw something at you?
   or
   Ever hit you so hard that you had marks or were injured?
   Yes  No  If yes enter 1 _______

3. Did an adult or person at least 5 years older than you ever …
   Touch or fondle you or have you touch their body in a sexual way?
   or
   Your touch or actually have oral, anal, or vaginal sex with you?
   Yes  No  If yes enter 1 _______

4. Did you often feel that …
   No one in your family loved you or thought you were important or special?
   or
   Your family didn’t look out for each other, feel close to each other, or support each other?
   Yes  No  If yes enter 1 _______

5. Did you often feel that …
   You didn’t have enough to eat, had to wear dirty clothes, and had no one to protect you?
   or
   Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
   Yes  No  If yes enter 1 _______

6. Were your parents ever separated or divorced?
   Yes  No  If yes enter 1 _______

7. Was your mother or stepmother:
   Often pushed, grabbed, slapped, or had something thrown at her?
   or
   Sometimes or often kicked, bitten, hit with a fist, or hit with something hard?
   or
   Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
   Yes  No  If yes enter 1 _______

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
   Yes  No  If yes enter 1 _______

9. Was a household member depressed or mentally ill or did a household member attempt suicide?
   Yes  No  If yes enter 1 _______

10. Did a household member go to prison?
    Yes  No  If yes enter 1 _______

   Now add up your “Yes” answers: _______ This is your ACE Score
APPENDIX B

Demographics – Part 1

1. Race(s)/Ethnicity(ies): ________________________________________________

2. Language(s) Spoken:
   a. First/Primary Language: _____________________________________________
   b. Secondary Language: ________________________________________________
   c. Third or More Languages: ____________________________________________

3. Gender: Male Female Self Identification: ______________________

4. Age: 18-20 21-23 24-27 28+

5. First Generation College Student: Yes No

6. Year in College: Freshman Sophomore Junior Senior

7. Previous College Experience:
   a. Running Start
   b. College in the High School
   c. Attended Community College Prior
   d. Attended another 4-year institution

8. Major: ___________________________ Minor: ___________________________

9. Parents Education Level: Mom Dad
   a. Less than High School
   b. High School – No College
   c. Some College
   d. Associate’s Degree
   e. Bachelor’s Degree
   f. Master’s Degree
   g. Doctorate
   h. Professional Degree
   i. Unknown

10. If you are willing to participate in a focus group exploring your transition into college, please leave your contact information: ________________________________
College Stressors and Academic Success Survey

Childhood Experiences

While you were growing up, during your first 18 years of life:

1. Did you live with anyone who often or very often...
   - Swore at you, insulted you, put you down, or humiliated you? or
   - Acted in a way that made you afraid that you might be physically hurt? Yes No

2. Did your family ever have any type of contact with Child Protective Services... Yes No

3. Were you ever homeless (not have a regular, adequate place to sleep) ... Yes No

4. Did you often or very often feel that...
   - No one in your family loved you or thought you were important or special? or
   - Your family didn’t look out for each other, feel close to each other, or support each other? Yes No

5. Were your parents ever separated or divorced? Yes No

6. Were any of your parents or step-parents:
   - Often or very often pushed, grabbed, slapped, or had something thrown at them? or
   - Sometimes, often, or very often kicked, bitten, hit with a fist, or with something hard? or
   - Ever repeatedly hit for at least a few minutes or threatened with a gun or knife? Yes No

7. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs? Yes No

8. Did you live with anyone who at any time was depressed or mentally ill, or who attempted suicide? Yes No

9. Did you live with anyone who went to jail or prison? Yes No
# College Experiences – Part 2

Please evaluate each experience for the level of stress or worry you felt at least two or three times a week over the past month:

<table>
<thead>
<tr>
<th>Experiences</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Roommate Conflict</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Homesick</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Friend Conflict</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Writing Papers</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Dieting</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Money</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Long-Distance Relationship</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Juggle School/Job</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Time—Extracurricular Activity</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. Noisy Residence Hall</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. No Car</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. Underweight</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. College Major</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. Miss Distant Friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. Poor Classwork</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. Car Trouble/Commuting</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. Family Illness</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. Not Having Lover</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>19. Job Pressure</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20. Privacy</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>21. Not Enough Sex</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22. Friend with Problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23. Behind in Schoolwork</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24. Dislike Appearance</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>New Living Conditions</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Problem with Lover</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Parental Pressure</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Not Having Friends</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Time Management</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Studying</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Not Enough Exercise</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Conflict with Parents</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Academic Performance</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>Poor Job Performance</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>Overweight</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>Amount of Sex with Lover</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>Don’t Fit In</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>Missing Classes</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>Drug/Alcohol Concerns</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>Schoolwork Overload</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>Conflicts in Residence Hall</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>Parents Have Problems</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>Tuition/Bills (Money)</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>Sports Performance</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>Ex-Lover Conflict</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>Study and Do Poorly</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>47.</td>
<td>Being Sick</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>48.</td>
<td>Sibling Conflict</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>49.</td>
<td>Where to Live?</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>50.</td>
<td>Time with Lover</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>51.</td>
<td>Difficult Class</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>52.</td>
<td>Weight Gain</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>53.</td>
<td>Unsure of Job Future</td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>54.</td>
<td>Not Enough Sleep</td>
<td>1 2 3</td>
<td></td>
</tr>
</tbody>
</table>
College Transition Reflection Questionnaire – Part 3

Tell us about your transition into college:

Tell us about challenges and supports you had when you transitioned into college?

If you transferred from a 2-year college, tell us about that transition as well: