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## Exploring the Associations Among Self-Harm, Anxiety, and Suicidal Ideation in the American College Health Association National College Health Assessment II

Meagan Clark  
mclark14@georgefox.edu

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EXPLORING THE ASSOCIATIONS AMONG SELF-HARM, ANXIETY, AND SUICIDAL  
IDEATION IN THE AMERICAN COLLEGE HEALTH ASSOCIATION NATIONAL  
COLLEGE HEALTH ASSESSMENT II

by

Meagan Clark

FACULTY RESEARCH COMMITTEE

Chair: Dane Joseph, PhD

Terry Huffman, PhD

Karen Buchanan, EdD

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GEORGE FOX  
UNIVERSITY

COLLEGE OF EDUCATION

“EXPLORING THE ASSOCIATIONS AMONG SELF-HARM, ANXIETY, AND SUICIDAL IDEATION IN THE AMERICAN COLLEGE HEALTH ASSOCIATION NATIONAL COLLEGE HEALTH ASSESSMENT II,” a Doctoral research project prepared by MEAGAN CLARK in partial fulfillment of the requirements for the Doctor of Education degree in Educational Leadership.

This dissertation has been approved and accepted by:

4/29/19

Date

Dane Joseph, PhD

Committee Chair

Assistant Professor of Education

4/29/19 Karen Buchanan

Date

Karen Buchanan, EdD

Professor of Education

4/29/19

Date

Terry Huffman, PhD

Professor of Education

### Abstract

The focus of this research was to explore self-harm, anxiety, anxiety's impact on academic performance, and suicidal ideation in university student populations using secondary data from the American College Health Association's National College Health Assessment II (ACHA NCHA II) survey. This research also explored these variables with the covariates graduate status, gender, sexual orientation, and race/ethnicity. This secondary research included undergraduate and graduate students from 140 universities across the United States with 88,178 total responses. The universities self-selected to administer the ACHA NCHA II and the students in each university were randomly sampled. This study used Pearson's Chi-square Test for Association to explore how overwhelming anxiety, anxiety's impact on academic performance, and suicidal ideation presented in university students with a history of self-harm. Each of the three variables were further analyzed in students with a history of self-harm based on graduate status, gender, sexual orientation, and race/ethnicity. The findings of this study suggest that overwhelming anxiety, anxiety's impact on academic performance, and suicidal ideation rates are elevated in university students with a history of self-harm, specifically in students who have self-harmed in the past 12 months. The covariates with the highest reports of experiencing these mental health concerns include the gender minority group, sexual orientation minority group, and race/ethnicity minority groups.

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## **Chapter One**

### **Introduction**

#### **An All Too Familiar Story of Self-Harm**

My counseling internship primarily focused on young adults, many of whom were graduate students, and were actively or recovering from self-harming. Although each patient had a unique background, the motivations and escalations of their self-harm were analogous. This is not a case study, rather this is an amalgamation of several patients to convey the degree that self-harm can impact daily and academic life. I will refer to this patient as Leigh. Leigh had been referred to our clinic by a psychologist that needed assistance with Leigh's chief presentation of self-harm, specifically cutting on her left proximal thigh and occasionally on her upper arm. Leigh's previous psychologist was well-respected in the counseling community; however, self-harm was not an area she felt confident enough in to continue treating Leigh. Leigh did not report self-harming with the intent of suicide but has reported thinking about suicide in the past without any attempts.

In the initial interview, Leigh was articulate but reserved about discussing her history of self-harm. She confided that she began self-harming by scratching herself in 9<sup>th</sup> grade with her fingernails when she was anxious or upset. In 10<sup>th</sup> grade, she began using razor blades to cut her thighs. She reported that she hid her cuts and scars from her parents and friends until recently when she disclosed her cutting to her mother because the wound was so severe she needed to be taken to the medical clinic for stitches. Leigh further described her self-harm patterns as sporadic and impacted by either her university work, interpersonal relationships, or times when she felt anxious. Leigh used her self-harming behavior as a punishment for any poor performance, which became a common form of punishment due to exceedingly high personal

standards she placed upon herself. Leigh did attempt to stop self-harming in her junior year of undergraduate coursework; however, problems with a family member resulted in reengaging in self-harm during the senior year of her undergraduate work. Leigh expressed that she knew some of her friends in high school and undergraduate school self-harmed; however, she felt that she should have outgrown cutting at her age.

After she completed her undergraduate degree Leigh was plagued with anxiety and self-doubt when applying to graduate programs. She decided to accept placement with an engineering company close to her home. Leigh reported that she did enjoy her job; however, her internship advisor was overtly demoralizing and would humiliate her in front of colleagues. She ended up leaving the company after one year with her self-harm at an all-time high and her self-esteem at an all-time low. Now, with her first year in graduate school, Leigh is having recurring anxiety and problems fitting in with her cohort. She is a few years older than most of her classmates and is having a tough time with her academics due to the six-year break between undergraduate coursework and her master-level coursework. Leigh's coping mechanism of self-harm was quite common in my internship. There were enough young adults and adults who self-harmed to support the creation of a weekly support group that provided a safe space for voicing self-harm issues that have inherent differences compared to younger individuals.

Self-harm is not a topic that solely appears in clinical settings. Following my internship, I accepted a position as assistant director of clinical education in a private-Christian university in California. The master's program duration was 28 months, and I was assigned to teach the psychology courses. These psychology courses were conducted in a more comfortable setting due to the inclusivity of the cohort. The students were more open with their classmates compared to undergraduate psychology courses where students often have not met before the course.

During one discussion group the topic of clients that self-harm or have suicidal thoughts was introduced and three students discussed their history of self-harm. When I asked how many students had some connection (either themselves, family members, or friends) with self-harm, 22 students in a class of 24 students raised their hands. This example of teaching is to reinforce that self-harm is not exempt from higher education. Instead, self-harm associations have slowly begun infiltrating the public attention, and more research needs to be completed in higher education, especially in graduate populations.

### **Statement of the Problem**

Self-harm has progressively increased in young adult populations and has become a growing health concern within college campuses (Wyatt, Oswalt, & Ochoa, 2017). This increase is alarming. The majority of self-harm research is targeted toward adolescent and undergraduate student populations; whereas limited research has evaluated self-harm in graduate students (Wyatt & Oswalt, 2013). Due to the range of graduate student classifications, such as professional and postgraduate students, the term graduate student in this research will represent these groups. Self-harm research also evaluates comorbidities which are often present such as suicidal ideation (Carvalho et al., 2015; Muehlenkamp & Gutierrez, 2004) and anxiety (Gollust, Eisenberg, & Golberstein, 2008; O'Connor, Rasmussen, & Hawton, 2010). Research also suggests that mental health issues have increased in sexual orientation minorities (Barnes, Hatzenbuehler, Hamilton, & Keyes, 2014; House, Horn, Coppeans, & Stepleman, 2011) and race/ethnic minorities (Borgogna, Mcdermott, Aita, & Kridel, 2018; Muehlenkamp, Hilt, Ehlinger, & McMillan, 2015). Additionally, research findings for self-harm, suicidal ideation, and anxiety are not consistent in the subgroups of gender identity (Bresin & Schoenleber, 2015; Czyz, Horwitz, Eisenberg, Kramer, & King, 2013), sexual orientation (Anti-Defamation League,

2017; Borgogna et al., 2018) and race/ethnicity (Czyz et al., 2013; De Luca, Yan, Lytle, & Brownson, 2014).

The period when an individual begins self-harming has been thought to impact suicidal ideation. Hamza and Willoughby (2014) identified that students who began harming before enrolling in university reported greater thoughts of suicide while attending university. Whereas a lower frequency of suicidal thoughts was found in students who began self-harming while attending university, students who ceased self-harming before enrolling in university, and students who relapsed into self-harm had a lower frequency of suicidal thoughts. While research suggests that self-harm engagement frequently decreases over time (Carvalho et al., 2015; Hamza & Willoughby, 2014), it is unlikely that self-harming behaviors immediately halt based on achieving educational milestones. Thus, the exploration of these mental health concerns in undergraduate and graduate student populations, and subpopulations, is paramount.

### **Purpose of the Research**

The focus of this research is to explore self-harm, anxiety, and suicidal ideation in university student populations. Mental health can drastically impact the productivity and ability for students to thrive in their academic program. By investigating undergraduate and graduate mental health, this research is vital to promote campus outreach, student mental health funding, and to increase awareness of mental health trends in demographic groups. This research will be accomplished with data collected from the American College Health Association's National College Health Assessment II (ACHA-NCHA II) 2018 Spring data collection.

## Research Questions

This study includes four questions surrounding mental health in university students. Questions 2, 3, and 4 also contain four sub questions based on graduate status, gender, sexual orientation, and race/ethnicity. The research questions are:

1. Is there a significant association among university students' overwhelming anxiety, academic performance, and suicidal ideation?
2. Are university students' overwhelming anxiety dependent on their self-harming status?
  - 2a. Are self-harming university students' overwhelming anxiety dependent on their graduate status?
  - 2b. Are self-harming university students' overwhelming anxiety dependent on their gender?
  - 2c. Are self-harming university students' overwhelming anxiety dependent on their sexual orientation?
  - 2d. Are self-harming university students' overwhelming anxiety dependent on their race/ethnicity?
3. Is anxiety's impact on academic performance in university students dependent on their self-harming status?
  - 3a. Is anxiety's impact on academic performance dependent on graduate status in self-harming university students?
  - 3b. Is anxiety's impact on academic performance dependent on gender in self-harming university students?



- 3c. Is anxiety's impact on academic performance dependent on sexual orientation in self-harming university students?
- 3d. Is anxiety's impact on academic performance dependent on race/ethnicity in self-harming university students?
- 4. Are university students' suicidal ideation dependent on their self-harming status?
  - 4a. Are self-harming university students' suicidal ideation dependent on their graduate status?
  - 4b. Are self-harming university students' suicidal ideation dependent on their gender?
  - 4c. Are self-harming university students' suicidal ideation dependent on their sexual orientation?
  - 4d. Are self-harming university students' suicidal ideation dependent on their race/ethnicity?

### **Significance of the Research**

Self-harm is a campus mental health concern, as well as a public health concern. This research aims to provide data to support increasing mental health outreach and programs for university students, as well as investigating the associations among self-harm, suicidal ideation, and anxiety. Furthermore, the ability to implement more self-care programs and mental health awareness on campus can be the first step for students to seek help. By instituting plans on campus, students may experience less hesitation in reaching out to discuss their mental health concerns and seek professional treatment, if warranted. In a report by the University of California, graduate students “contribute to the research and teaching missions of the University. Many go on to distinguished careers in research and teaching within academia, and many others

go on to careers in a wide variety of professions in industry, non-profits, and government” (*The University of California Graduate Student Well-Being Survey Report*, 2017, p. 9). Intervention initiated at the graduate education level may have a positive long-term impact as students prepare for their next life event, such as graduation and beginning a new job.

The Council of Graduate Schools and Graduate Record Exams (2017) administered the CGS/GRE Survey of Graduate Enrollment and Degrees and reported 0.9% overall growth of graduate student enrollment and a 1.9% increase in first-time graduate student enrollment between the Fall of 2015 and the Fall of 2016. Growth in graduate student enrollment results in more students with mental health needs. This increase warrants improved and expanded mental health programs on campus. Barreiray, Basilicoz, and Bolotnyy (2018) interviewed PhD economic students at eight American universities and reported that older students’ mental health was worse than younger students. Results from this study identified that “14.5% of the first-year students are experiencing moderate to severe symptoms of depression and anxiety, compared to 25% of those who are in years 5+ in their program. Similarly, 7% of the first-year [PhD] students report contemplating suicide in the last 2 weeks, compared to 13% of those in years 5+” (Barreiray, Basilicoz, & Bolotnyy, 2018, p. 5). This jump in anxiety at the end of graduate student education is alarming; however, this research did not evaluate self-harm. Comparison of anxiety and suicidal ideation in graduate students with and without a history of self-harm provides a deeper look into the mental health crisis of graduate students (Flaherty, 2014).

Furthermore, this research explored the importance for campus mental health outreach to include graduate students. Graduate student exclusion may be due to current self-harm research which has focused almost exclusively on undergraduate populations. Graduate students often live off-campus, have assumed more debt (Baum, Ma, Pender, & Welch, 2016), and are transitioning

into more rigorous academic requirements. Although graduate students are at an equal or greater risk of suicidal ideation (Bernanke et al., 2017), Garcia-Williams, Moffitt, and Kaslow warn that “barriers to mental health service include cost, time, confidentiality, fear of impact on academic career, inadequate number of sessions, stigma, long wait lines, lack of awareness, improving symptoms, and access problems” (2014, p. 555). Self-harming factors in graduate student populations are distinct from adolescent and undergraduate populations. Increased campus awareness by faculty, administrators, staff, and counselors can assist in improving graduate students overall quality of life. An improved quality of life can potentially improve attrition rates, program satisfaction, and increased academic performance in undergraduate and graduate students. This can only be accomplished with increased understanding of self-harm and successful implementation of campus student outreach. Successful mental health outreach should aim to lessen student trepidation of help-seeking for self-harm and establishing campus support. This would create a mutually beneficial outcome to the student as well as the university.

### **Key Terms**

*Asexual:* An individual who does not experience sexual attraction; however, other forms of attraction, such as emotional attraction, may be experienced (Anti-Defamation League, 2017).

*Attempted suicide:* any intentional harmful act against oneself carried out with awareness of its potentially harmful ramifications that can result in death (Aviad-Wilchek, Ne, & Malka, 2017).

*Bisexual:* An individual with an attraction to members of both sexes (American Psychological Association, 2015)

*Cisgender:* Gender identity that corresponds to the biological sex at birth (APA, 2015).

*Comorbidity*: Occurrence of two or more mental health issues, such as a patient that has been diagnosed with obsessive compulsive disorder and post-traumatic stress disorder (Turner et al., 2015).

*Gay*: An individual that experiences emotional, physical, and/or romantic attraction to individuals of the same gender; most commonly applied to males (ADL, 2017).

*Genderqueer*: Refers to a person whose gender identity falls outside of the gender binary. The term “gender fluid” can also be an identifier whereas individuals in this group typically reject the term “transgender” as it implies a change from one gender category to another. (American Psychiatric Association, 2015).

*Lesbian*: A woman who experiences emotional, physical, and/or romantic attraction to women (ADL, 2017).

*Non-suicidal self-injury (NSSI)*: is the deliberate, self-inflicted destruction of body tissue for purposes not socially sanctioned without suicidal intention (Angelotta, 2015; Croyle & Waltz, 2007).

*Overwhelming anxiety*: In the context of this research overwhelming anxiety is conceptualized as anxiety which strongly impacts daily functioning inside and outside of academic environment.

*Pansexual*: An individual that experiences emotional, physical, and/or romantic attraction to some individuals, regardless of the other’s gender identity or biological sex (ADL, 2017).

*Professional program*: Professional programs are graduate level education programs that train students to enter a specific profession such as medicine, law, dentistry, or similar programs.

*Queer*: Term can be used as an alternative to LGBT to increase inclusivity. Queer was originally a derogatory term that some individuals in the LGBT community have sought to reclaim with a positive interpretation (ADL, 2017).

*Questioning*: Refers to an individual in the process of understanding their sexual orientation and/or gender identity (ADL, 2017).

*Self-harm*: The deliberate destruction of body tissue (Gratz, 2001). As opposed to NSSI, suicidal ideation is not specified.

*Straight/Heterosexual*: Individual with an emotional, physical, and/or romantic attraction to the opposite sex (APA, 2015).

*Suicidal ideation*: The act of thinking about, considering, or planning suicide (Klonsky, May, & Saffer, 2016).

*Transgender*: A term that includes differences in gender identity where the individual's biological/birth sex does not match their felt identity (APA, 2015).

### **Limitations and Delimitations**

**Limitations.** This study has several limitations including utilizing the term self-harm, as opposed to non-suicidal self-injury (NSSI). Respondents are asked in Question 30I "Have you ever intentionally cut, burned, bruised, or otherwise injured yourself?" (American College Health Association [ACHA], 2015, p. 12). Unfortunately, Question 30I provides no insight if the self-harm was completed with or without suicidal intent. Due to this lack of clarity, the researcher will use the term self-harm in the study.

The second limitation is the survey approach itself in this study. Students will have been asked time-sensitive questions that require them to specify their last date of self-harm; however, the period can become distorted unless the respondent remembers the date of their last self-harm episode. If the respondent is experiencing denial or apprehension about reporting their anxiety, self-harm, or suicidal ideation this can adversely impact the results by decreasing objectivity of the responses.

***Secondary data limitations.*** Using secondary data is a limitation the researcher has encountered. Adhering to the question and response format created by the ACHA limits the research specificity. For example, the five time periods respondents have reported regarding mental health issues in the survey are: the last two weeks, the last 30 days, the last 12 months, more than 12 months ago, and never. Using self-injury as an example, it would be helpful to include an additional period of self-harming in the past six months. This would assist in clarity by breaking down an 11-month disparity of the gap between harming in the past month or the past year. To address the secondary data limitations, the researcher will need to follow several steps. These steps include a strict data analysis process, reflective examination, and evaluation of the data.

The third limitation in this research is the period in which the data was collected. The ACHA collected the data in Spring 2018. Therefore, this data may not be representative of the mental health status of current university students. This is due to the use of secondary data which has created a lapse in the availability of the data for analysis.

The researcher's nonparticipation in the data collection is also a limitation. This limitation is also a product of using secondary data. Thus, the researcher is unable to oversee the survey collection and completion process. For example, the researcher will not be able to clarify questions respondents may have for this specific research.

**Delimitations.** This study will confine itself to only students that have categorized themselves as an undergraduate or graduate student on item NQ51. Only evaluating undergraduate and graduate students does not include students who are enrolled but not seeking a degree. Additionally, this research will only be investigating students that are enrolled as 'full-time' or 'part-time' status on item NQ52; whereas students that have selected the 'other' enrollment

option will be excluded (ACHA, 2015). This will reduce generalizability to students not enrolled in full-time or part-time education programs.

The ACHA-NCHA II includes three questions related to anxiety; however, only responses in Item 30G (overwhelming anxiety) and Item 45A3 (anxiety's impact on academic performance) will be included. The remaining anxiety questions inquire about clinically diagnosed anxiety (Item 31A2). Clinically diagnosed anxiety requires professional evaluation and often individuals that self-harm are more cautious about seeking mental health due to the stigma surrounding self-harm (Mitchell, McMillan, & Hagan, 2017).

Self-selection of the participating universities is another limitation. The self-selection to administer the ACHA-NCHA II by the universities may limit the generalizability of universities across the United States. Conversely, there is a distribution of student body sizes, Carnegie classifications, and geographical locations. The universities were self-selected; whereas the student respondents were selected by random sampling by their university.

The final delimitation is the large volume of possible factors that could potentially impact self-harm. This study aims to assess the associations between self-harm, anxiety, and suicidal ideation; however, many additional factors and mental health associations may exist. By limiting this research to focusing on anxiety and suicidal ideation, other areas such as employment, genetics, abuse history, and student debt will be excluded by the researcher. Unfortunately, this may not adequately represent the entire spectrum of associations with university students.

The DSM-5 includes anxiety as one of the possible associations with non-suicidal self-injury (NSSI); whereas suicidal ideation is not included. Furthermore, the DSM-5 terminology of non-suicidal self-injury initially appears to be the antithesis of this presentation. However, the classification of non-suicidal self-injury is predicated on the behavior immediately before the act

of self-harm. While the deliberate act of self-harm is not necessarily a suicide attempt, this does not exempt individuals from having suicidal thoughts at times when they are not actively engaged in self-harm. In their research of adolescent NSSI Nock, Joiner, Gordon, Lloyd-Richardson, and Prinstein (2006) warn that the increased rates of suicide attempts (and thus, suicidal ideation) should “prompt clinicians to evaluate the presence of suicidal thoughts and behaviors in those engaging in NSSI and vice versa. It is clear that these are distinct behaviors; however, it is equally clear that these behaviors often co-occur” (p. 71). Increased association and risk of suicidal ideation has been further discussed in populations with active and past self-harm (Orlando, Broman-Fulks, Whitlock, Curtin, & Michael, 2015). The lack of congruent terminology and classification between non-suicidal self-injury and self-harm, as well as the timeframe of suicidal ideation about self-harm has created a lack of clarity between research methods. Specifically, Whitlock et al. (2013) found that individuals, independent of the level of severity of harm, who engage in NSSI demonstrate significantly more suicidality compared to individuals without a history of NSSI.

### **Summary**

The inclusion of self-harm (via NSSI) in the DSM-V has prompted further research to evaluate this behavior. Research aimed at self-harming patterns in university student populations is needed due to increasing numbers of university student enrollment. Utilizing secondary data from the ACHA-NCHA II's extensive database will provide a more diverse sample. This study seeks to increase mental health awareness of self-harm, anxiety, and suicidal ideation in university students. University student subgroups including gender, sexual orientation, and race/ethnicity will also be explored. Investigating these subgroups will provide a window into possible minority mental health risks.



## Chapter Two

### Literature Review

#### Introduction

The purpose of this literature review is to illuminate research focused on the associations of self-harm, anxiety, and suicidal ideation. Furthermore, this literature review aims to discuss how self-harm, anxiety, and suicidal ideation individually present themselves within university populations and the subgroups of graduate status, gender, sexual orientation, and race/ethnicity.

#### Self-Harm

Self-harm is the deliberate, self-inflicted destruction of body tissue for purposes not socially sanctioned (Angelotta, 2015; Croyle & Waltz, 2007). Several terms for self-harm exist within the research, including self-injury (Batejan, Swenson, Jarvi, & Muehlenkamp, 2015; Murray, Warm, & Fox, 2005), self-mutilation (Ross & Heath, 2002), non-suicidal self-injury (Groschwitz & Plener, 2012; MacLaren & Best, 2010), and deliberate self-harm (Chapman, Gratz, & Brown, 2006; Gratz, 2001). Defining self-harm is a complex barrier that makes classifying this mental health presentation challenging. Self-harming behavior has been inundated with inconsistent and interchangeable terminology over the past few decades (Butler & Malone, 2013). This evolving terminology can result in confusion of the intended behavior or purpose of study depending on researcher aims.

Research completed in the 1970's initially described this presentation as parasuicide, a common term that was utilized until the late 1990's (Platt & Kreitman, 1990; Sidley, Calam, Wells, Hughes, & Whitaker, 1999). Parasuicide was described as "a non-fatal act in which an individual causes self-injury" (Platt & Kreitman, 1990, p. 57). In 1990, Mazelis created a newsletter, *The Cutting Edge*, which introduced the term 'self-inflicted violence' (McLane,

1996). The more recent term introduced to describe self-harming behavior is NSSI (Hamza & Willoughby, 2014; Schatten, Andover, & Arney, 2015). The Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5) has included NSSI as a condition that necessitates further study (Glenn & Klonsky, 2013). Item NQ30I on the ACHA-NCHA II asks respondents “Have you ever intentionally cut, burned, bruised, or otherwise injured yourself” (American College Health Association, 2017, p.32). This phrasing of item NQ30I does not account for suicidality associated with the self-harming behavior. Due to this lack of accounting for suicidality, or a lack of suicidality, the term self-harm will be used in this literature review, unless directly quoting a source which incorporates NSSI or an equivalent term.

**Self-harm: symptom or presentation?** Self-harm has been heavily debated regarding its connection with borderline personality disorder (BPD). Zetterqvist details that “there is a general consensus that there is an association between BPD and NSSI but that NSSI is not unique to BPD” (2015, p. 2). Since self-harm may be independent of BPD, there is justification to evaluate self-harm as its own presentation. Pattison and Kahan (1983) suggested that deliberate self-harm without the diagnosis of BPD should be included in the Diagnostic and Statistical Manual of Mental Disorders (DSM). In 2015, the DSM-5 included NSSI in Section III: Emerging Measures and Models as a presentation that requires additional research (Zetterqvist, 2015). The DSM-5’s proposal outlined that NSSI is associated with “interpersonal difficulties or negative feelings or thoughts, such as depression, anxiety, tension, anger, generalized distress, or self-criticism, occurring in the period immediately prior to the self-injurious act.” (American Psychiatric Association, 2013, p. 1014). This updated edition of the DSM-5 identified that additional research on NSSI is needed. The need for additional research supports the possibility of self-harm being identified as its own presentation in addition to being a symptom of BPD.

**Etiology.** Multiple theories have attempted to establish an understanding of why individuals engage in self-harm. The most commonly reported functions include: (a) regulation of negative affect state, (b) transitioning out of a dissociate state, (c) self-punishment, and (d) self-harm as an attention-seeking behavior used to elicit care and concern from others (Klonsky, 2009; Nock & Prinstein, 2004; Wilcox et al., 2012). In other words, self-harm may be caused by negative affect which includes a negative emotional state and negative views regarding the individual's relationships and surroundings; whereas self-harm to end a dissociate state occurs when an individual cannot voluntarily bring themselves back into reality without self-harming. Self-harm can also be employed as a form of self-punishment for getting a low score on an exam or relationship problems the individual believes is his/her fault. Finally, the social awareness of self-harm has slowly increased and may often be used for an attention-seeking approach to peers, family, or the public. Equally important etiological factors to consider include neurobiological factors (Groschwitz & Plener, 2012), trauma (Polk & Liss, 2007), abuse (Bolen, Winter, & Hodges, 2013; Maniglio, 2011), and the expected duration of self-harming activity (Hamza & Willoughby, 2014).

**Interpersonal Reinforcement.** Social cognitive theory posits that individual behaviors become adopted through modeling of peers in our environment (Hasking, Andrews, & Martin, 2013). Social modeling increases during adolescence, and often becomes the foundation for identity and acceptance within a social group. Fortune, Sinclair, and Hawton surveyed 5,293 15-16-year-old students at 41 schools regarding their help-seeking behavior; this was administered using the Deliberate Self-Harm (DSH) assessment tool (2008). They noted that researching the connection between friends' self-harming patterns can provide an insight as to why young people self-injure when distressed as opposed to engaging in similar behaviors such as substance and

alcohol use (Fortune, Sinclair, & Hawton, 2008). In their findings, 40% of participants in the study reached out to friends about their self-harm and only 11% reached out to a family member. Although this data was collected from high school aged students, university students' social connections could offer additional support.

***Intrapersonal Reinforcement.*** Intrapersonal negative reinforcement often originates from self-punishment that suggests self-harm is an “expression of anger or derogation towards oneself” that has been learned from their environment (Klonsky, 2007, p. 229). Groschwitz and Plener authored an extensive review on the neurobiology of self-harm (2012). This review noted that “There is evidence for the intrapersonal vulnerability factor of high aversive emotions, as well as the interpersonal vulnerability factor of poor social problem solving (supported by altered neurochemical reactions in social stress tasks)” (2012, p. 29). One example of a case scenario of intrapersonal negative reinforcement is a student who was scheduled to meet with their advisor to discuss quiz results. The student did not perform as well as expected and blamed themselves for never being good enough. This increase in negative emotions results in the student self-harming as a punishment for the quiz results. This is an example of interpersonal negative reinforcement.

Interpersonal positive reinforcement proposes that an individual becomes involved in self-harming practices to gain acceptance of their peers or from learned behaviors in their peer groups (Dahlström, Zetterqvist, Lundh, & Svedin, 2015). For example, an individual notices that her group of friends all wear bracelets on their left wrist. One day, it is discovered that the bracelets are used to cover up an area of self-harm. The individual may begin engaging in self-harm and wear similar bracelets to demonstrate commonality with group members. Social cognitive theory is predicated on positive and negative interpersonal reinforcement.

***Trauma and abuse history.*** A history of childhood trauma or abuse is a substantial risk factor for self-harm engagement. Childhood abuse can include sexual, physical, or emotional elements (Murray, Warm, & Fox, 2005) and individuals who engage in self-harm may also report a history of trauma including physical and/or emotional neglect, dissociation, or alexithymia (Briere & Gil, 1998; Polk & Liss, 2007). Alexithymia describes the inability to identify and express emotional experiences appropriately and to describe emotions in words. This failure to vocalize emotions could consequently result in self-harm being used as an outlet for nonverbal communication of distress. The risk of ongoing mental health issues are exacerbated if an individual experienced or was the target of childhood abuse or neglect. This is due to abusive and neglectful families rarely demonstrating or teaching self-soothing techniques to the child. The severity, duration, and frequency of the abuse have been found to impact further risk of self-harming behavior (Maniglio, 2011).

**Onset and Expected Duration.** The initial age of onset for engaging in self-harm is often reported in early to middle adolescence (Nock & Prinstein, 2004); however, this is not consistent throughout all findings. The age of onset varies slightly according to Hamza and Willoughby, who note that most self-harmers “have their onset in late adolescence, rather than early adulthood, because we found that very few young adults reported new NSSI [non-suicidal self-injury] onset from first- to second-year university” (2014). Using a two-wave study, Hamza and Willoughby surveyed undergraduate students (n=666) at a mid-size Canadian university one year apart using the Inventory of Statements About Self-Injury (ISAS) (2014). Participants identified the frequency they have engaged in self-injurious behaviors, such as cutting or burning. The participants were also asked to specify how many times their self-injurious behaviors lacked suicidal intent. Participants were later surveyed regarding their self-harming

behaviors in the past year. Students who continued to self-harm before and during their undergraduate studies reported “significantly higher levels of internalizing behaviors (e.g., depressive symptoms, emotional reactivity) and greater suicidal ideation than the other self-injuring group” (Hamza & Willoughby, 2014, p. 681). These findings suggest that graduate students that are continue self-harming throughout their graduate programs may be at an elevated risk of suicidal ideation and mental health concerns, compared to students that have ceased self-injurious behaviors. Anxiety and mental distress are often noted during the transition from high school into a higher education environment, and the transition to graduate education should be explored. Furthermore, impairment of stress reactivity can be increased in individuals that persistently engage in self-harm (Wilcox et al., 2012). Resultant scarring from self-harm can intensify stress and anxiety for high school and college-age students consequently leading to a further descent into self-harm and a decrease in positive body-image (Dyer, Hennrich, Borgmann, White, & Alpers, 2013; Taliaferro & Muehlenkamp, 2015).

Expected lifetime frequency and duration of self-harm can be predicted by interpersonal and intrapersonal functions (Saraff & Pepper, 2014); although it should be noted that interpersonal factors appear more often in groups with a lower frequency of self-harm involvement. Intrapersonal factors predicted higher levels of frequency of self-harm from a longitudinal perspective. Interpersonal factors are based on an external locus and peer influence (commonly referred to as a contagion effect) with more pressure during adolescence. One study reported that 80% of students ceased self-harming within five years of initial onset (Whitlock, Eckenrode, & Silverman, 2006). If a student’s first episode of began at the age of 15-16, approximately 80% reported no self-harm engagement after 20-21 years of age. Students that began self-harming because of interpersonal factors (peer-pressure) may begin to develop

appropriate coping skills and mechanisms as they age. However, this can result in a longer and more severe duration of self-injury if the student is driven by intrapersonal factors such as low self-worth and anxiety (Saraff & Pepper, 2014).

**Methods of Self-Harm.** Cutting and burning are two commonly reported forms of self-harm, though not inclusive. Self-harm can also include eating disorders, ingestion of toxic chemicals, as well as drug and alcohol use; however, the purpose of this study is to evaluate external tissue damage to the skin and will not include these conditions. Item NQ30I in the ACHA-NCHA II enquires about the participant's history of self-harm asking "Have you ever intentionally cut, burned, bruised, or otherwise injured yourself" (American College Health Association, 2015, p.12). Bruising is usually a response to a form of self-harm such as punching, biting, or inserting objects below the skin (Fikke, Melinder, & Landro, 2011). Hoff and Muehlenkamp (2009) performed a study on university students and further reached out to contact students with a history of self-harm (n=56). Of these students they found that 48.2% reported cutting, 42.9% reported punching or hitting that resulted in bruising, 30.4% disclosed to inserting sharp objects into the skin, and 26.8% divulged in severe skin scratching (Hoff & Muehlenkamp, 2009). While this population was small, it was concentrated on college-age students in a Midwestern university that were open to discussing their method or methods of self-harm. The mean number of self-harm methods employed was 2.6 (SD=2.15), indicating the importance of evaluating the lesser used practices, which will be discussed further in this section. Multiple methods of self-harm are further supported by Glenn and Klonsky who found that "93% of self-injurers engaged in more than one method of NSSI" (2013, p. 501). Several explanations exist for multiple methods of self-harm. One method is individuals that self-harm may use any sharp objects they can find when they are in a crisis. For instance, if an individual preferred cutting, but

was unable to carry or find a razorblade at school they may resort to using scratching their skin in lieu of cutting. Another explanation is that self-harming often creates a tolerance. If an individual first self-harmed scratching their skin but begin to feel less relief over time they may begin experimenting with cutting or burning.

**Cutting.** Cutting involves external tissue damage most commonly using a razor blade, fingernails, or knives (Angelotta, 2015; Manners & Durkin, 2001; Nock, 2010). Cutting is a coping mechanism in this context. Cutting is also distinct from body modification, a trend that has risen in mainstream culture, such as scarification. Favazza supports the differentiation between cutting as body modification and cutting related to mental health noting that societal acceptance of self-harm is "evidenced by the expanding number of Internet sites and chat rooms devoted to both body modification and deviant behaviors such as cutting and even amputation" (2009, p. 33). Kuentzel, Arble, Boutros, Chugani, and Barnett (2012) researched a community sample of undergraduates at a Midwestern university and reported cutting is the most frequently reported form of self-harm with 7.89% of participants reporting this behavior (n=5,565). One study that evaluated 15-year old adolescents also reported findings with cutting as a prominent method of self-harm including "carving words, pictures, etc. into the skin" as found in 24.4% of participants with a history of self-harm (Lundh, Karim, & Quilisch, 2007, p. 37). Research by Glenn and Klonsky (2013) also found cutting was reported by 89% of participants with a history of self-harm. Utilizing the Inventory of Statement of Self-Injury, Batejan, Swenson, Jarvi, and Muehlenkamp (2015) researched non-suicidal self-injury in college-age students, although participants undergraduate/graduate classification was not identified. Their research identified wound picking as the dominant self-harm form in 37.3% of students that self-harmed and cutting was the second most prominent form of self-harm. This contradicts previous research which



suggests that cutting and skin scratching are the most common self-harm forms. The body areas that are most frequently damaged include the arms, forearms, upper thighs, and wrists, respectively (Freeman, 2002).

***Burning.*** Burning of the skin is performed most often with cigarettes, heated metal objects, matches, or lighters. In a study of college-age students, Kuentzel et al. (2012) found that 1.09% of the population (n=5,565) reported burning their skin as their primary method of self-harm. Chemical burns are usually classified in a different category that includes "scrubbing one's skin with bleach, comet, or oven cleaner" (Lundh et al., 2007, p.37) in 4.1% of their population and dripping acid onto the skin was reported by 0.8% of the population (n=123). Gratz also mentions "using bleach or oven cleaner to scrub skin" in her analysis of self-harming behaviors according to the Deliberate Self-Harm Inventory (2001, p.257).

***Bruising.*** Self-harm behaviors that result in skin bruising were identified by Whitlock, Muehlenkamp, and Eckenrode as a group of actions that includes "light tissue damage such as punching or banging oneself or other objects (with the express intention of hurting the self), sticking sharp objects into the skin (not including tattooing, body piercing, or needles used for medication use), and self-bruising" (2008, p. 728). It is critical to note that body piercing, tattooing, and body modification have been expressly eliminated from self-harm categories in multiple studies (Bloom & Holly, 2011; Chapman et al., 2006; Nock & Favazza, 2009; Schatten, Andover, & Armey, 2015) due to the societally acceptable practice in Western culture. Kuentzel et al. (2012) further found that 1.6% of their population (n=5,565) reporting self-hitting and punching and 1.28% reported kicking or punching an object as the primary method of self-harm.

***Additional self-harm methods.*** The inclusion of unspecified methods of self-harm along with the open-ended wording of 'or otherwise' in item NQ30I provides the space for inclusion of graduate students who utilize less common methods of self-harm. These forms of self-harm have included but are not limited to biting (Glenn & Klonsky, 2011; Ross & Heath, 2002), sticking pins, needles, or staples into the skin (Messer & Fremouw, 2008), rubbing sandpaper on the skin (Lundh et al., 2007), and rubbing glass into the skin (Gratz, 2001), dermatillomania (skin picking) (Croyle & Waltz, 2007), trichotillomania (hair pulling) (Victor, Glenn, & Klonsky, 2012), and onychophagia (nail biting) (Manca, Presaghi, & Cerutti, 2014; Wells, Haines, & Williams, 1998). Often classified as severe methods of self-harm is the breaking of bones and one of the newest methods that has surfaced in the last ten years is self-embedding. Self-embedding involves the insertion of inanimate objects into the soft tissue, either under the skin or into a muscle (Bennett, Shiels, Young, Lofthouse, & Mihalov, 2011). The inclusion criteria of self-harm methods vary not only in studies but within mental health provider and researcher's personal classifications. For this review, eating disorders, tattooing, and skin piercing will be excluded due to their higher rate of occurrence in the general population.

### **Self-Harm in University Populations.**

Research focused on college-age populations has suggested self-harm rates range from 6% of adults (Victor et al., 2012) to 12.8% (Kuentzel et al., 2012) with Polk and Liss noting rates as high as 41% of college-age adults engaging in self-harm in their literature review (2007). Whitlock et al. (2006) completed a study that measured a population of undergraduate and graduate students that included the average self-harming behaviors age of onset. The study identified that almost 40% of the sample reported an average age of onset during late adolescence to early adulthood.

Students in higher education environments that self-harm often seek out support from educators or school counselors. University mental health counselors were surveyed regarding their perception of self-harm. Of the respondents, 40.2% identified that they were uncomfortable working with self-injurious students due to the “potential lethality of the behavior, even if unintentional” (Whitlock, Eells, Cummings, & Purington, 2009). The National Survey of Counseling Center Directors surveyed mental health directors and 91% agreed that the number of students presenting with severe psychological symptoms has steadily increased each year. Directors were additionally asked to report specific mental health problems that have increased over the last five years that require immediate response, including a reported increase in self-harm (Whitlock et al., 2009). The increase in students presenting with self-injury on campus has consistently been outlined in more recent studies. In 2014, Gallagher and Taylor surveyed 275 university mental health workers and 94% of directors reported students presenting with severe psychological issues continues to rise. Gallagher and Taylor also asked campus mental health professionals “Compared to five years ago, what changes have you noticed in the number of clients with... [anxiety disorders/self-injury]” (2014, p. 12). An increase in anxiety disorders was noted by 89% of respondents. An increase in self-harm was identified by 35.16% of respondents; however, the social stigma of help-seeking surrounding self-harm may account for this discrepancy. In this study only 5.86% of respondents reported a decrease in the number of self-harm clients (Gallagher & Taylor, 2014). This small decrease is cause for concern, as it identifies the number of students reporting self-harm remained consistent or increased. In a more recent study, Pérez-Rojas identified that “serious suicidal ideation and non-suicidal self-injury have also seen marked increases in the last five years—but the lifetime prevalence for suicide attempts has stayed relatively flat” (Pérez-Rojas et al., 2017, p. 417).

There is little research that specifically addresses the difference between undergraduate and graduate self-harm occurrence. Muchlenkamp, Claes, Havertape, and Plener (2012) evaluated the existing cross-cultural research about non-suicidal self-injury with the addition of deliberate self-harm, self-injury, and self-mutilation terminology. The results of self-harm prevalence was not statistically significant in variation; however, the researchers noted that the various approaches to frequency measurement of behavior engagement created the most substantial impact on results. Of paralleled importance to the measurement of frequency, there is a lack of consensus of classification and a lack of an empirically validated self-harm inventory (Gratz, 2001).

Students whom engage in self-harm face numerous challenges in their interpersonal connections and intrapersonal attitudes. These challenges may become exacerbated in rigorous university settings, and the social stigma of self-harm further intensifies negative feelings around students who continue to self-harm (Schatten et al., 2015). These feelings result in a shaming complex that creates little space for understanding, help, and support (VanDerhei, Rojahn, Stuewig, & McKnight, 2014). An additional obstacle is the lack of research that has been completed on graduate students that self-harm or those with a history of self-harm.

Undergraduate students and high-school students from a social viewpoint are at an increased risk due to their age and period of transition from middle school to high school or the transition from high school to university. Additionally, many social psychologists have primarily focused on undergraduate populations due to the convenience of access through studies completed by students in introductory psychology courses. Henrich, Heine, and Norenzayan noted that often researchers utilize students enrolled in psychology and similar required degree courses as a convenience sample with a “tendency to rely on undergraduate samples [which] has

not decreased over time” (2010, p. 63). The focus on primarily first and second year university students is advantageous for assessing self-harm following a major period of transition (i.e. high school to university). However, this may not provide a complete assessment of third- and fourth-year undergraduate students and falls short of capturing a complete picture of graduate student self-harming prevalence.

### **Suicidal Ideation in University Populations.**

Suicidal ideation is perceived as one of the most concerning mental health issues present in graduate students (Garcia-Williams et al., 2014). Suicidal ideation is a key element in the suicidal behavior process that can potentially trigger a suicide attempt or a completed suicide (Santos, Marcon, Espinosa, Baptista, & Paulo, 2017). Suicidal ideation involves not only the contemplation of suicide; frequently this ideation involves the strategic planning to accomplish suicide (Klonsky et al., 2016). Eisenberg, Gollust, Golberstein, and Hefner (2007) randomly selected 485 undergraduate and graduate students for a survey on suicidal thoughts and behaviors, of which 263 students completed the survey. Questions from the National Comorbidity Survey Replication were implemented to survey the students regarding suicidal thoughts and behavior. Results identified that 2.5% of undergraduates and 1.6% of graduate students reported suicidal thoughts in the past four weeks and one student reporting a suicide attempt in the past four weeks (2007). This suggests that undergraduates may have an elevated risk of suicidal ideation; however, it is important to identify that graduate students could also benefit from mental health intervention.

Recently, Bernanke et al. (2017) conducted a latent class analysis of suicidal behavior to identify subgroups of at-risk students based on the Interactive Screening Program (ISP). The latent class analysis utilized the ISP to categorize and evaluate students with varying levels of

mental health. Class I group having the lowest level of mental health risk factors and Class 6 having the highest level of mental health risk factors. Researchers found that 1.0% of Class 1 (very low risk) graduate students reported suicidal ideation; whereas 62.1% of graduate students in class 6 (very high risk) identified experiencing suicidal ideation (Bernanke et al., 2017). These findings were contrasted with undergraduate latent class analysis, with no statistical difference identified between undergraduate and graduate suicidal ideation rates. Denmark, Hess, and Baker reported that “almost 80% of students who die by suicide never receive services at their campus counseling center” (2012, p. 84). These findings support the need for evaluating suicidal ideation in graduate students is equal, if not paramount to undergraduate populations. Furthermore, university educators, administrators, and staff’s reliance on counseling services is vital as students experiencing suicidal ideation may not seek professional help (Wilson & Deane, 2010).

Hamza and Willoughby (2014) evaluated undergraduate students with a history of self-harm and suicidal ideation in a longitudinal study using The Suicide Behaviors Questionnaire-Revised (SBQR). The SBQR is useful for identifying suicidal ideation frequency and the likelihood of a future suicide attempts. The results of the SBQR findings in this study suggest that undergraduates who begin harming during university and undergraduates who are recovered injurers reported greater suicidal ideation compared to participants without a history of self-harm. Hamza and Willoughby further identified that "first-time engagement, relapsed injuring, and persistent injuring among university students coincided with increases in problem behaviors, problems with parents, internalizing behaviors, and suicidal ideation" (2014, p. 683-684). To summarize, most of the research on suicidal ideation is targeted at clinical, adolescent, and undergraduate populations; however, long-term impacts of suicidal ideation continue into graduate education and their association with self-harm also needs to be evaluated.

### **Self-Harm and Suicidal Ideation**

Suicidal ideation is multi-faceted and is frequently researched in conjunction with self-harm (Carvalho et al., 2015; Nock et al., 2006; Zetterqvist, 2015). Whitlock et al. (2013) explains that “the presence of NSSI may serve as an early or warning sign of STB [suicidal thoughts and behavior], understanding the temporal relationship between them holds clear clinical relevance” (p. 1-2). To distinguish between self-harm with suicidal ideation is a complex endeavor and “some theorists have suggested that NSSI is the antithesis of suicide and that people engage in NSSI to prevent themselves from attempting suicide” (Jacobson, Muehlenkamp, Miller, & Turner, 2008, p. 364). Self-harm is viewed as an antithesis of suicide due to respondents stating they self-harm to stop their suicidal thoughts and to feel calm. This is due to the earlier described neurophysiology of self-harm and the release of endorphins following the self-harming episode. In 2002, suicide for individuals between 15 and 25 years of age accounted for approximately 4,010 deaths (Jacobson et al., 2008). The Association for University and College Counseling Center Directors (AUCCCD) surveys directors of university mental health counseling centers and publishes an annual report. In the most recent 2017 report, university counseling center directors identified that 25.2% of undergraduate and graduate students reported experiencing suicidal ideation. This number has increased from 16.1% of students reporting suicidal ideation in the 2012 survey (Pérez-Rojas et al., 2017).

Nock, Joiner, Gordon, Lloyd-Richardson, and Prinstein (2016) summarized that high rates of suicide attempts and ideation in the adolescent population they studied “should prompt clinicians to evaluate the presence of suicidal thoughts and behaviors in those engaging in NSSI and vice versa. These are distinct behaviors; however, it is equally clear that these behaviors often co-occur” (p. 71). Andover (2014) identified individuals who self-harm and are negative

for BPD diagnosis report more suicidal ideation than participants that do not engage in self-harm. The co-occurrence of suicidal ideation and self-harm is often identified. Although suicidal ideation and self-harm often co-occur, it is also common for individuals who self-harm to report that suicide is not the goal of self-harm.

Klonsky et al. (2016) completed a thorough literature review to outline the disparities between suicide, suicide attempts, and suicidal ideation. In their review (Klonsky et al., 2016) they established that “NSSI correlates with variables, such as depression, known to increase the risk for suicidal ideation; and NSSI facilitates habituation to self-inflicted violence and pain which in turn increases the capacity to attempt suicide” (p. 309). Whitlock et al. (2013) also investigated the connection between suicidal thoughts and behaviors (STB) and self-harm independent of mutual risk factors between the two groups. In this study (Whitlock et al., 2013), students from eight universities in the Northeast and Midwest completed a web survey that evaluated student wellbeing and students with a history of self-harm and STB were identified. Whitlock et al. (2013) identified that the risk for concurrent and later STB has nearly tripled in populations with a history of self-harm. Additionally, individuals with current or later STB have a larger occurrence of self-harm over their lifetime (Whitlock et al., 2013). Hamza and Willoughby (2014) evaluated suicidal intent and self-harm in undergraduate students from a Canadian university using a two-wave study structured twelve months apart. They found that individuals who engaged in non-suicidal self-injury reported increased levels of psychosocial risk factors compared to students without a history of NSSI (Hamza and Willoughby, 2014). Additionally, Hamza and Willoughby (2014) noted that “little is known about the development and maintenance of NSSI during the university years” (p. 672).



Nock and Favazza (2009) defined NSSI as “the direct, deliberate destruction of one’s own body tissue in the absence of suicidal intent” (p. 9). Nock and Favazza (2009) also describe NSSI self-injurious thoughts and behaviors have several subcategories, one of which is referred to as a suicide threat. At first glance, this category appears to be contradictory; however, a suicide threat in this context refers to “a statement or behavior in which people lead others to believe they intend to kill themselves when they really have no intention of doing so” (Nock and Favazza, 2009, p. 12). This classification of a suicidal gesture as a subcategory of NSSI suggests that this behavior is used to influence others. It should be clarified that not all self-harm without suicidal intent is an attention-seeking mechanism. These and similar findings were influential for introducing the term NSSI. When the term NSSI is incorporated in research it acknowledges a lack of association between suicidality and self-harm. The term self-harm has been selected for this research to reduce erroneous analysis of the inclusion or exclusion of suicide specifically on item NQ30I, which only refers to self-harm, not the intent behind it.

The co-occurrence of self-harm and suicidal thoughts has been disputed in other findings. Muehlenkamp, Cowles, and Gutierrez (2010) identified that “while NSSI and suicidal behavior can co-occur, a significant portion of those having engaged in NSSI deny current and past suicidal ideation as well as past attempts” (p. 237). Kuentzel et al. (2010) similarly differentiates between NSSI and suicidal ideation; however, they further noted that “although NSSI and attempted suicide are positively correlated, the internal dynamics of those committing self-injury for the purposes of suicide are markedly different from those without this intention” (p. 291). The connection between self-harm and suicidal ideation has several theories that propose how and if a connection exists. This supports the need for additional research, especially for university students.

### **Anxiety in University Populations**

Clinical anxiety is the most frequently diagnosed mental health condition which currently impacts more than forty million Americans annually (Ratanasiripong, Sverduk, Prince, & Hayashino, 2012). Aside from the clinical diagnosis, it is unknown how many individuals suffer from anxiety and do not seek treatment. Graduate students are no exception to elevated levels of reported anxiety. A 2016 report published by The Association for University and College Counseling Center Directors identified that 50.6% of the undergraduate and graduate respondents cited anxiety as their predominant mental health concern (Reetz, Bershad, Leviness, & Whitlock, 2016). Graduate student anxiety origins differ from adolescent and undergraduate students. Some of these differences may be attributed to the fact that graduate student populations often live off-campus, have assumed more debt (Baum et al., 2016), and are transitioning into more rigorous academic requirements. Eisenberg et al. (2007) found higher anxiety rates in undergraduate compared to graduate students, noting that 3.3% of graduate students experienced anxiety with functional impairment. The description of functional impairment is utilized in research to determine the degree of impact the mental health topic, such as anxiety, influences the participants (Kessler, Chiu, Demler, & Walters, 2005). Functional impairment is crucial in evaluating the prevalence of anxiety in university students because it accounts for students who have not sought medical treatment. Wilson and Deane (2010) noted that “epidemiological studies suggest that only about a quarter of young people with a mental health problem seek professional care” (p. 292). This suggests that nearly three quarters of university age students in need of mental health services are not seeking help. These researchers ascertain that clinically diagnosed students only represent a fraction of the students experiencing anxiety.

When professionally evaluated, the onset of anxiety varies based on the type of anxiety such as generalized anxiety disorder. According to Bandelow and Michaelis (2015) “anxiety disorders start in childhood, adolescence, or early adulthood until they reach a peak in middle age, then tending to decrease again with older age” (p. 331). Generalized anxiety disorder has a median age of onset of 31 years; whereas, phobias that induce anxiety have a median age of onset of seven years. Though the median ages presented are for clinical diagnoses, anxiety that is present in students who have not sought medical help could also peak between childhood and young adulthood (Bandelow & Michaelis, 2015). In Spring 2018, 77% of graduate student participants who completed the ACHA-NCHA II were between 18 and 31 years of age (ACHA, 2017). This suggests that over three quarters of graduate student populations are within the adolescent and young adulthood age range where clinical anxiety, and possibly functional anxiety, peak and requires further research.

### **Anxiety and Self-Harm**

Self-harm can impact individuals’ interpersonal lives, physical health, academic performance, and mental health which frequently increases anxiety (Schatten et al., 2015). Anxiety related to self-harm function is bidirectional; engaging in self-harm and resultant scar tissue can result in increased anxiety. Conversely, self-harm is often used as a coping mechanism for individuals to decrease their anxiety. Ross and Heath (2002) found that “students who self-mutilate reported significantly more anxiety and depressive symptomatology than students who did not self-mutilate” (p. 67).

A paradox exists within the scope of self-harm that involves higher rates of reported anxiety prior to engaging in self-harm, followed by reduced anxiousness. Favazza (2009) suggests that self-harm is used to stabilize presentations such as anxiety and that “these

behaviors [self-harm] serve as an attempt to correct or prevent pathological, destabilizing conditions that threaten the community, individual, or both” (p. 21). Dalström et al. (2015) noted that a high-arousal effect, such as anxiety, decreases after an individual engages in self-harm and subsequently the low-arousal effect of relief increases. This results in a learned behavior that creates a vicious cycle of high arousal affects being self-medicated with self-harm to increase a period of relief which is often short-lived. Briere and Gil (1998) highlighted that “the most frequently cited function of SMB [self-mutilating behavior] in the modern literature is that of affect regulation. SMB may reduce anxiety, depression, tension, loneliness, feelings of emptiness, guilt, dissociation, and the impacts of intrusive phenomena” (p. 610). Chapman et al. (2006) reported individuals “with DSH [deliberate self-harm] report high levels of aversive internal states both before and after DSH and in general including depressive affect, anxiety, depersonalization or emptiness, and mixed anxiety and depression” (p. 379). These findings support the paradox of experiencing higher levels of anxiety and the lack of impulse control due to the ability of self-harm to temporarily reduce anxiety.

**Neurophysiology of self-harm associated with anxiety.** Assessing the neurophysiology of self-harm provides another view into the association with anxiety and suicidal ideation. Freeman (2002) identified that self-harm “causes endorphins to be released, providing analgesia, reduced anxiety and decreasing dysphoria” (p. 2). In other words, following the act of self-harming, the individual will report decreased pain, anxiety, agitation, and restlessness. Freeman (2002) further notes that some individuals have impaired opiate systems and external stimuli, such as self-harm, can help to stimulate opioid receptors via endogenous agonists. Opioid receptors can be stimulated through external or internal hormones. For example, injecting heroin introduces exogenous opioid agonists that originate outside of the body; whereas, the

endogenous opioid agonists originate within the body. Endogenous opioid agonists are released from the brain when a self-harming episode begins. The endogenous opioid system is composed of opioid peptides that function as neurotransmitters and neuromodulators that exist within the central and peripheral nervous system. Endogenous opioids can provide powerful relief that reduces anxiety following a self-harm episode. Holden, Jeong, and Forrest (2005) found that individuals with a history of self-harm displayed decreased sensitivity and deactivation of endogenous opioid receptors. Due to the decreased sensitivity and activation of the receptors, these individuals commonly report higher levels of pain tolerance (Nock & Prinstein, 2004). Additionally, opioid receptor activation results in decreased heart rate; however, without the appropriate receptor activity during a negative affective state, individuals are unable to control their heart rate and anxiety (Holden et al., 2005). The pain induced by self-harm stimulates the opioid activity creates a calming effect (Bresin, Carter, & Gordon, 2013; Holden et al., 2005).

### **Mental Health in Minority Populations**

**Race/ethnic minorities.** Racial demographics often include a disproportionately large amount of data collected from White student populations. Davis, Weiss, Tull, and Gratz (2017) identified that “the vast majority of this [self-harm] research is limited by the use of predominantly European-American samples, interfering with efforts to understand the rates and correlates of DSH among individuals of diverse ethnic backgrounds” (p. 351). For example, 95% of the sample identified as White in a study of college student self-harm completed by Batejan, Swenson, Jarvi, and Muehlenkamp (2015). Additional research targeted at college student suicidality’s demographic data included 79% of undergraduate respondents and 72% of graduate students identified as Caucasian/White (Drum, Brownson, Denmark, & Smith, 2009). This proves to be problematic, as this distribution may not be representative of all ethnicities and

excludes minority student populations. This section of the literature review will explore the presentations of self-harm, anxiety, and suicidal ideation in seven racial groups. The seven groups have been selected to align with Question 54 on the ACHA-NCHA II questionnaire. The seven racial demographic groups in the ACHA-NCHA II include: White, Black, Hispanic or Latino/a, Asian or Pacific Islander, American Indian/Alaskan Native/Native Hawaiian, Biracial/Multiracial, and Other.

Understanding mental health seeking patterns is essential prior to discerning self-harm, suicidal ideation, or anxiety in each racial demographic. Czyz, Horwitz, Eisenberg, Kramer and King (2013) evaluated professional help barriers in college students with increased suicide risks. In this study (Czyz et al., 2013), non-Caucasian and non-Asian students were organized into one group due to small sample sizes; though Asian students only represented 15.9%. The non-Caucasian and non-Asian group were comprised of 7.6% multiracial students, 3.2% Black students, 2.5% Hispanic students, and 2.6% of students selected other or not identified (Czyz et al., 2013). Using the Patient Health Questionnaire-9 (PHQ-9), researchers reported that “students identifying as multiracial, black, or ‘other’ (52.2%) were more likely to mention lack of time as a barrier to help seeking when compared with Caucasian (21.5%) and Asian (20%) students” (King, 2013, p. 402). Though the group of non-Caucasian and non-Asian students was smaller, the group was twice as likely to cite a lack of time to seek mental health services (King, 2013). This suggests that campus mental health service outreach should consider increased focus on individuals with mental health concerns in racially/ethnically diverse demographic groups.

To access research on suicidal ideation and anxiety, the researcher searched for studies which focused specifically on minority mental health. Samples in current university mental health data are predominately White/Caucasian respondents. Mokrue and Aciri (2015) studied

567 undergraduate minority students using the Beck Anxiety Inventory (BAI). The BAI is a 21-item instrument where participants self-report and rate common symptoms of anxiety, such as a pounding heart or fear of losing control (Beck, Epstein, Brown, & Steer, 1988). Mokrue and Acri's (2015) study reported "ethnic minority college students in our sample experienced clinical levels of anxiety and depression at a higher proportion compared to predominantly Caucasian college populations surveyed by the American College Health Association" (p. 195). This study (Mokrue and Acri, 2015) was influential in the researcher's decision to include racial/ethnic demographics. While the ACHA NCHA II still has a predominately White/Caucasian response pool, there has been an increase in non-Caucasian participants; however, this is not consistent in all demographics. This increase of some minority responses can be seen when comparing the race/ethnicity demographic of the ACHA NCHA II from the Fall of 2010 to the Spring of 2018, as seen in Table 1. This demographic includes both undergraduate and graduate students.

Table 1  
*Demographic Comparison of Race/ethnicity in ACHA NCHA II Fall 2010 to Fall 2018*

Race/ethnicity	Fall 2010 frequency	Fall 2010 %	Spring 2018 frequency	Spring 2018 %	Growth 2010-2018
White	19,427	64.6%	55,949	63.5%	+36,522
Black or African-American	2,452	8.1%	4,260	4.8%	+1,808
Hispanic or Latino/a	3,014	10.0%	15,363	17.4%	+12,349
Asian or Pacific Islander	4,466	14.8%	12,514	14.2%	+8,048
American Indian or Alaskan	706	2.3%	1,607	1.8%	+901
Biracial or Multi racial	1,135	2.7%	4,399	5.0%	+3,264
Other	821	2.7%	2,414	2.7%	+1,593

The distribution of the ACHA-NCHA II race/ethnicity demographics demonstrates minimal changes. However, the number of undergraduate and graduate minority responses has increased from 12,594 participants in Fall 2010 to 27,963 participants in Spring 2018. This increase provides a larger sample of responses will assist in exploring minority mental health trends on university campuses. Looking at the distribution by percentage, the most noticeable race/ethnicity increase occurred in the Hispanic or Latino/a group and the Biracial or Multiracial group; whereas, the largest decline occurred in the Black or African-American group (ACHA, 2011, 2018).

Lipson, Kern, Eisenberg, and Breland-Noble (2018) evaluated a sample of minority students who participated in the Health Minds Study survey from 2012-2015. Their research (Lipson et al., 2018) aimed to identify disparities of mental health in undergraduate and graduate students of color. Specifically, the study (Lipson et al., 2018) explored African-American, Latinx, Asian/Asian American, and Arab/Arab American students and noted that help-seeking and treatment was lower in students of color compared to White/Caucasian students. This study (Lipson et al., 2018) outlined that White/Caucasian students experienced higher levels of diagnoses, medication use, and therapy compared to students of color. Lipson et al. (2018) also discussed that “the majority of students of color are turning to friends, family, and other informal sources for support” (p. 353). The discrepancy of clinical help-seeking between students of color and White/Caucasian can be contributed to discrimination and financial constraints. The informal help-seeking from friends and family supports the need for campus outreach to consider providing educational outlets for friends and family members to assist students with mental health issues.



**Sexual orientation minorities.** The ACHA NCHA II asks respondents to identify their sexual orientation in Question 48 with nine response options including (a) asexual, (b) bisexual, (c) gay, (d) lesbian, (e) pansexual, (f) queer, (g) questioning, (h) straight/heterosexual, and (i) other (ACHA, 2018). These response options defining each sexual orientation is in the Key Terms section. In a campus report, Rankin, Blumenfeld, Weber, and Frazer (2010) summarized that students with minority sexual orientations “were significantly less likely than their allies to feel very comfortable or comfortable with the overall campus climate, their department/work unit climate, and classroom climate than their heterosexual counterparts” (p. 12). This lack of belonging further supports the vitality of studying how mental health varies based on individual sexual orientations.

Discrepancies in mental health findings are rife with disparity when comparing the mental health of heterosexual and sexual orientation minorities. Li, Pollitt, and Russell (2016) evaluated depression among young adults with minority sexual orientations. Their findings discovered that “self-identified mostly heterosexual and bisexual young adults, but not lesbians and gay men, reported significantly higher concurrent depression compared to heterosexuals; moreover, only mostly heterosexual young adults were more depressed than heterosexuals 6 years later” (Li, Pollitt, and Russell, 2016, p.697). Though their research focused on depression, their findings support inherent differences between sexual orientation subgroups (Li, Pollitt, and Russell, 2016).

Furthermore, Barnes, Hatzenbuehler, Hamilton, and Keyes (2014) identified that sexual minority individuals “with higher educational attainment are at equal or lower risk of psychiatric disorder compared to those with lower educational attainment” (p. 1,448). Their research (Barnes et al., 2014) also identified that 19.8% of the Lesbian, Gay, or Bisexual (LGB) group had

statistically higher odds (20%) of having an anxiety disorder with a bachelor's degree compared to the heterosexual odds (13.9%). The odds of an anxiety disorder in sexual minority students without a bachelor's degree is 36.2%; this is significantly larger compared to graduate students who will have completed a bachelor's degree (Barnes et al., 2014). In this study, Barnes, Hatzenbuehler, Hamilton, and Keyes (2014) grouped LGB into one group rather than assessing the groups individually. However, this is not an isolated occurrence, most research on sexual minorities do not differentiate between sexual orientations. Frequently, sexual minorities are grouped together, usually as an approach to accommodate a smaller sample size. The nine sexual orientation responses in the ACHA NCHA II survey will facilitate a more detailed portrait of these minorities.

Failure to investigate differences between sexual minority groups is another prevalent concern. This concern is resonated by Muehlenkamp, Hilt, Ehlinger, and McMillan (2015) who noted that "studies with larger samples of sexual minority individuals should be careful to examine differences between those identifying as bisexual, gay/lesbian, questioning, or queer to determine whether unique patterns of risk exist within these subgroups" (p. 6). Muehlenkamp, Hilt, Ehlinger, and McMillan (2015) surveyed 137 self-reported sexual minority college students to assess non-suicidal self-injury and suicidal thoughts and behaviors. Using the Inventory of Statements about Self-Injury, the study (Muehlenkamp et al., 2015) reports 62.8% of respondents experienced lifetime NSSI, 66.4% experienced suicidal thoughts, and 42.9% experienced NSSI and suicidal thoughts and behaviors. Although the study did not identify undergraduate or graduate status of participants, this increased prevalence of mental health issues is consistent throughout the literature. Hill and Pettit (2012) also reported similar findings in their cross-sectional study of 198 undergraduate students with 50 participants categorized as gay, lesbian, or

bisexual (GLB). Using the Adult Suicidal Ideation Questionnaire (ASIQ) to assess suicidal ideation and reported that GLB participants exhibited significantly higher levels of suicidal ideation, compared to heterosexual students (Hill & Pettit, 2012). This study also evaluated the GLB's perceived rejection due to sexual orientation. In this study, the university students who perceived rejection due to sexual orientation "were especially likely to experience perceived burdensomeness that was, in turn, associated with higher levels of suicidal ideation" (Hill & Pettit, 2012, p. 576). Students questioning their sexuality have also been found to experience higher rates of mental health concerns. Brownson, Drum, Smith, and Denmark's (2011) research identified that men questioning their sexual orientation were at an increased risk of suicidal ideation. These findings support the need for inclusivity and equity training for university students, administrators, faculty, and staff, related to mental health awareness and sexual minority risk factors.

Although most of the research suggests an increased risk of mental health issues in racial/ethnic minorities, which is not consistent in all research. House, Horn, Coppeans, and Stepleman (2011) researched individuals with sexual orientation and additionally explored racial minority within the group of sexual orientation. Their findings reported that "racial minority status was not associated with an increased risk of either suicidal or nonsuicidal self-injury as might have been expected based on the minority stress model" (House et al., 2011, p. 77). The minority stress model proposes that minority individuals experience excessive stress; this excessive stress is a product of their minority social status being stigmatized (House et al., 2011; Meyer, 2003). Borgogna, McDermott, Aita, and Kridel (2018) noted that sexual minority students "experience excess stress because of their minority status (or statuses), which can lead to, exacerbate, and maintain mental and physical health problems" according to the minority

stress model (p. 2). These discrepancies, as well as the need to investigate each sexual minority independently, warrants further exploration of this minority group.

**Gender and gender minorities.** Epidemiological differences based on gender have been found in mental health research (Borgogna et al., 2018; Bresin & Schoenleber, 2015). Most often, women have higher self-reported rates of self-harm. Bresin and Schoenleber (2015) analyzed the gender differences in reported self-harm noting that women were “more likely than men to engage in methods of NSSI that generally involve blood” (p. 60). However, the severity of self-harm (e.g. breaking a bone) appears to be higher in men (Whitlock et al., 2006). Brownson, Drum, Smith, and Denmark (2015) conducted a secondary analysis using the ACHA NCHA and reported that “female graduate students emerged as a uniquely high-risk group, proving over twice as likely as graduate men to report a recent suicide attempt” (p. 288). This finding supports additional female graduate student research is needed as suicidal ideation precedes suicide attempts.

In a study by Whitlock et al. (2011), females were almost twice as likely to report lifetime NSSI events. However, Whitlock et al. (2011) also identified that males were as likely as females “to report self-injury in the past year, a finding consistent with studies reporting no difference in male and female self-injury rates on college campuses” (p. 695). Males and females having similar rates of self-harm has been contrasted by additional studies and it is posited that males are less likely to report self-harming due to expected masculine societal norms (Green & Jakupcak, 2016). Green and Jakupcak (2016) identified that male “behaviors may be seen as prototypically aggressive or violent male behaviors” (p. 152). The gender variation in mental health research warrants further examination.

The ACHA NCHA II includes six gender identification responses including (a) woman, (b) man, (c) transwoman, (d) transman, (e) genderqueer, and (f) another identity (ACHA, 2018). The responses in the ACHA NCHA II will facilitate a more substantive approach to comparing self-harm, suicidal ideation, and anxiety within the six gender categories. Often, research studies have combined transwomen and transmen into a single transgender category (House et al., 2011; *The University of California Graduate Student Well-Being Survey Report*, 2017). The study of additional minority gender identities, such as transgender and genderqueer, require a deeper exploration of mental health issues in gender minorities.

The inclusion of minority gender identities is often thwarted by small sample sizes. In their study, Oswalt and Wyatt (2011) utilized the ACHA NCHA Fall 2009 data where only 0.1% of respondents ( $n = 42$ ) identified as transgender. In their conclusion (Oswalt & Wyatt, 2011), they identified that future studies need “more transgender respondents to explore how these characteristics intersect with sexual orientation, mental health issues, and academics” (p. 1,276). Fortunately, the ACHA NCHA II not only includes transgender identity, but further distinguishes between transmen and transwomen (ACHA, 2018). Evans, Bira, Gastelum, Weiss, and Vanderford (2018) researched graduate student depression and anxiety and 90% of respondents ( $n = 2,279$ ) were PhD students and the remaining 10% were master’s students. Their study reported that transgender/gender-nonconforming groups and female students are significantly more likely to experience anxiety compared to male graduate students. Their findings reported increased anxiety in sexual minority graduate students; however, it is difficult to ascertain if anxiety differs between sexual minority subgroups, such as transwomen, transmen, and genderqueer.

## Conclusion

The associations of anxiety and self-harm (Gollust et al., 2008; O'Connor et al., 2010; Ross & Heath, 2002; Taliaferro & Muehlenkamp, 2015), as well as self-harm and suicidal ideation (Andover, 2014; Carvalho et al., 2015; Saraff & Pepper, 2014) have been researched in adolescent and undergraduate student populations, with limited analysis of graduate students. Research is even more sparse when comparing mental health presentations in demographic subgroups including gender minorities, sexual orientation minorities, and racial/ethnic minorities. Self-harm, suicidal ideation, and anxiety are prominent mental health concerns on university campuses in the United States. Lipson et al. (2016) identified that “mental health in early adulthood is linked to several important outcomes, including social connectedness, academic performance and retention, and future economic productivity” (p. 23). It is important to note that a sizeable portion of research on self-harm has approached anxiety within the context of clinical anxiety such as generalized anxiety disorder (Klonsky, 2007; MacLaren & Best, 2010; Ratanasiripong et al., 2012). Research on the relationship between self-harm and self-reported overwhelming anxiety (with or without a clinical diagnosis) has been completed in a more limited capacity in comparison to clinically diagnosed anxiety (Hoff & Muehlenkamp, 2009). The prevalence of anxiety in university student populations has steadily risen over the last ten years, and students that employ self-harm often report experiencing anxiety (Borgogna et al., 2018; Murray et al., 2005; Ratanasiripong et al., 2012). This study aims to compare prevalence rates of self-harm, anxiety, and suicidal ideation centered around university students.

### **Chapter Three Methodology**

The purpose of this research is to explore associations of self-harm, anxiety, and suicidal ideation in university student populations. This includes exploring if associations exist between these mental health issues based on graduate status, gender identity, sexual orientation, and race/ethnicity. This chapter will explain the methods that will be used to analyze the data in this study. Details that comprise the research, including participants, the data instrument, study design, research analysis, and goals will be included in this chapter. The researcher will further describe the research ethics, demographics, variable operationalization, and outline the research analysis for the research questions.

Secondary data analysis was conducted using data obtained in the Spring of 2018 by the American College Health Association's National College Health Assessment II (ACHA-NCHA II) to answer the following research questions:

1. Is there a significant association among university students' overwhelming anxiety, academic performance, and suicidal ideation?
2. Are university students' overwhelming anxiety dependent on their self-harming status?
  - 2a. Are self-harming university students' overwhelming anxiety dependent on their graduate status?
  - 2b. Are self-harming university students' overwhelming anxiety dependent on their gender?
  - 2c. Are self-harming university students' overwhelming anxiety dependent on their sexual orientation?

- 2d. Are self-harming university students' overwhelming anxiety dependent on their race/ethnicity?
- 3. Is the anxiety's impact on academic performance in university students dependent on their self-harming status?
  - 3a. Is anxiety's impact on academic performance dependent on graduate status in self-harming university students?
  - 3b. Is anxiety's impact on academic performance dependent on gender in self-harming university students?
  - 3c. Is anxiety's impact on academic performance dependent on sexual orientation in self-harming university students?
  - 3d. Is anxiety's impact on academic performance dependent on race/ethnicity in self-harming university students?
- 4. Are university students' suicidal ideation dependent on their self-harming status?
  - 4a. Are self-harming university students' suicidal ideation dependent on their graduate status?
  - 4b. Are self-harming university students' suicidal ideation dependent on their gender?
  - 4c. Are self-harming university students' suicidal ideation dependent on their sexual orientation?
  - 4d. Are self-harming university students' suicidal ideation dependent on their race/ethnicity?



## **Research Design and Sample**

This secondary data analysis utilized the American College Health Association's National College Health Assessment II (ACHA-NCHA II) dataset. The data were collected during the Spring 2018 term. This design allows for the collection of data from a large cohort across a diverse geographical area. Universities and students consented to completing the survey which was provided in electronic and printed versions. This study evaluated a single cohort of university students in the spring term of 2018.

There is a wide array of instruments that investigate self-harm; however, many of these instruments are primarily used for identifying clinical disorders such as generalized anxiety disorder or post-traumatic stress disorder. There were four criteria in this research that only the ACHA-NCHA II fulfilled. The first three variables that must be addressed with the instrument are questions around self-harm, suicidal ideation, and anxiety. The fourth variable is an instrument that included data specific to graduate student populations. All four variables were included in the ACHA-NCHA II, which had a sample size of 12,569 graduate student responses in Spring 2018. This sample size is much larger than the researcher would be able to collect independently. An added benefit of secondary data analysis with the ACHA-NCHA II is the organization's affiliation with eight other organizations which formed the Higher Education Mental Health Alliance in 2008 (Mack, 2011). This alliance focuses on "advocacy actions, policy development and review, practice dissemination, research, and advancement of mental health issues throughout the realm of higher education" (Mack, 2011, p. 487). Because of the ACHA's commitment to research and advancement of mental health issues, the data is available to members of the ACHA.

There are several negative aspects of using secondary data. This includes the gap in data collection times, lack of researcher participation, and a lack of generalizability across the United States (Vartanian, 2010). However, the advantages of using secondary data collected by the ACHA far outweighs the disadvantages, including the ability to evaluate sexual orientation, gender, and racial/ethnic graduate student minorities.

**Instrument.** The ACHA-NCHA II mental health section items contains the data for this study. Self-harm, suicidal ideation, and anxiety were placed in the ‘Mental Health Harm’ category by the ACHA (ACHA, 2013). A report on validity and reliability of the ACHA-NCHA II was published by the ACHA (2013) based on the Spring 2009 and Spring 2010 data with sample sizes of 87,105 students and 95,712 students, respectively. The questions in the 2016 dataset have not been altered from the time of the reliability and validity survey. Self-harm, anxiety, and suicidal ideation questions are included in the “Mental Health Harm” section of the ACHA NCHA II. The standardized alpha score of the three questions in the “Mental Health Harm” category was .70 in Spring 2009 and a standardized alpha score of .71 in Spring 2010, indicating an acceptable measure of internal validity. Overwhelming anxiety, item NQ30G produced a standardized alpha score of .83 in Spring 2009 and .84 in Spring 2010 indicating a good measure of internal validity (ACHA, 2013). Average inter-item correlation scores (e.g. strength of relationships) are identified between .15 (a weak positive correlation) and .50 (a moderate positive correlation) and the average inter-item correlation for the “Mental Health Harm” category was .43 (a somewhat positive, moderate correlation) in Spring 2009 and .45 (a somewhat positive, moderate correlation) in Spring of 2010 (Clark & Watson, 1995). The average inter-item correlation for “Mental Health” category was .45 (a somewhat positive, moderate correlation) in Spring 2009 and .46 (a somewhat positive, moderate correlation) in

Spring of 2010 (ACHA, 2013). The standardized alpha scores and average inter-item correlation suggests that these questions demonstrate internal consistency and are a reliable measure of anxiety, suicidal ideation, and self-harm.

**Participants.** The ACHA-NCHA II dataset consists of 88,178 students enrolled at 140 postsecondary institutions in the United States (ACHA, 2018). The demographics of the graduate universities are outlined below in Table 2.

Table 1  
*ACHA NCHA II Spring 2018 University Demographics*

University demographics	<i>n</i>	%
Institution Type		
Public	96	68.57
Private	44	31.43
Location of Campus		
Northeast (CT, ME, MA, NH, NJ, NY, PA, RI, VT)	23	16.43
Midwest (IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI)	33	23.57
South (AL, AR, DE, DC, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV)	33	23.57
West (AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY)	51	36.43
Campus Size		
< 2,500 students	35	25.00
2,500 – 4,999 students	16	11.42
5,000 – 9,999 students	26	18.57
10,000 – 19,999 students	25	17.86
20,000 students or more	38	27.14

This analysis will focus on self-harm (item NQ30I), overwhelming anxiety (item NQ30G), suicidal thoughts (item NQ30J) and the anxiety's impact on academic performance (item NQ45A3). The median age of the graduate student population is 26.00 years of age and range from 18 to 89 years of age (ACHA, 2018).

## Variables

Question 1 explored three independent variables: overwhelming anxiety, the anxiety's impact on academic performance, and suicidal ideation. Question 2 explored if an association exists between overwhelming anxiety (dependent variable) and self-harm (independent variable). Question 3 explored if the anxiety's impact on academic performance (dependent variable) is associated with self-harm (independent variable). Question 4 explored if an association exists between suicidal ideation (dependent variable) and self-harm (independent variable). All variables are outlined in Table 3.

Four covariate associations were explored in relation to overwhelming anxiety (question 2), the anxiety's impact on academic performance (question 3), and suicidal ideation (question 4). The covariates include graduate status, gender, sexual orientation, and race/ethnicity (see Table 3). The variables were evaluated based on the university students' history of self-harm.

**Survey Responses.** Questions in the ACHA NCHA II for self-harm, overwhelming anxiety, and suicidal ideation have five responses each. Five identical options for response are provided on items NQ30G, NQ30I, and NQ30J in ACHA NCHA II as: (1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last two weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months (American College Health Association, 2015). The ACHA-NCHA II only allows one response per question. For example, if a student reports self-harming in the past 30 days, they will only receive a score for this period even though the answer falls within the parameters of the last 12 months as an option. Self-harming response data was split into three groups: students who have never self-harmed (SH-), students who have not self-harmed in the past 12 months (SH-), and students who have self-harmed in the past 12 months (SH12+).

There are six responses for the anxiety's impact on academic performance (NQ45A3), which include: (a) This did not happen to me/not applicable, (b) I have experienced this issue but my academics have not been affected, (c) Received a lower grade on an exam or important project, (d) Received a lower grade in the course, (e) Received an incomplete or dropped the course, (f) Significant disruption in thesis, dissertation, research, or practicum work (ACHA, 2018). This research has also explored the associations of four covariates: graduate status, gender, sexual orientation, and race/ethnicity. In order to increase confidence of the findings and to lower the margin of error, the variables and covariates have been operationalized. The operationalization of variables is outlined below in Table 4.

Table 2

*Operationalization of Demographic Variables*

RQ	Variables	Operationalization
1	IV #1: Overwhelming Anxiety  IV #2: Anxiety's impact on academic performance  IV #3: Suicidal ideation	<b>Overwhelming anxiety:</b> Never experienced/not experienced in the past 12 months: <ul style="list-style-type: none"> <li>– No, never</li> <li>– No, not in the last 12 months</li> </ul> History of overwhelming anxiety in the past 12 months: <ul style="list-style-type: none"> <li>– The last two weeks</li> <li>– The last 30 days</li> <li>– The last 12 months</li> </ul>
2	DV: Overwhelming Anxiety  IV #1: Self-harm	<b>Anxiety in Academic Performance:</b> Academic performance not impacted by anxiety: <ul style="list-style-type: none"> <li>– This did not happen to me/not applicable</li> <li>– I have experienced this issue, but my academics have not been affected</li> </ul> History of anxiety in academic performance: <ul style="list-style-type: none"> <li>– Received a lower grade on an exam or important project</li> <li>– Received a lower grade in the course</li> <li>– Received an incomplete or dropped the course</li> <li>– Significant disruption in thesis, dissertation, research, or practicum work</li> </ul>
3	DV: Anxiety's impact on academic performance  IV #1: Self-harm	<b>Suicidal Ideation:</b> Never experienced/not experienced in the past 12 months: <ul style="list-style-type: none"> <li>– No, never</li> <li>– No, not in the last 12 months</li> </ul> History of suicidal ideation: <ul style="list-style-type: none"> <li>– The last two weeks</li> <li>– The last 30 days</li> <li>– The last 12 months</li> </ul>
4	DV: Suicidal Ideation  IV #1: Self-harm	<b>Self-harm:</b> Never self-harmed (SH-): <ul style="list-style-type: none"> <li>– No, never</li> </ul> No self-harm in the past 12 months (SH12- group): <ul style="list-style-type: none"> <li>– No, not in the last 12 months</li> </ul> Self-harmed in the last 12 months (SH12+ group): <ul style="list-style-type: none"> <li>– The last two weeks</li> <li>– The last 30 days</li> <li>– The last 12 months</li> </ul>

Table 3

*Operationalization of Demographic Covariates*

RQ	Variables	Operationalization
2	DV: Overwhelming Anxiety IV #1: Graduate status IV #2: Gender IV #3: Sexual orientation IV #4: Race/ethnicity	<b>Graduate Status:</b> Undergraduate: <ul style="list-style-type: none"> <li>– 1st year undergraduate</li> <li>– 2nd year undergraduate</li> <li>– 3rd year undergraduate</li> <li>– 4th year undergraduate</li> <li>– 5th year or more undergraduate</li> </ul> Graduate: <ul style="list-style-type: none"> <li>– Graduate or professional</li> </ul> <b>Gender:</b> Woman Man
3	DV: Anxiety's impact on academic performance IV #1: Graduate status IV #2: Gender IV #3: Sexual orientation IV #4: Race/ethnicity	Gender minority: <ul style="list-style-type: none"> <li>– Transwoman</li> <li>– Transman</li> <li>– Genderqueer</li> <li>– Another identity</li> </ul> <b>Sexual Orientation:</b> Heterosexual Bisexual Homosexual Sexual orientation minority: <ul style="list-style-type: none"> <li>– Asexual</li> <li>– Pansexual</li> <li>– Queer</li> <li>– Questioning</li> <li>– Same Gender Loving</li> <li>– Another identity</li> </ul>
4	DV: Suicidal Ideation IV #1: Graduate status IV #2: Gender IV #3: Sexual orientation IV #4: Race/ethnicity	<b>Race/ethnicity:</b> White Hispanic or Latino/a Asian or Pacific Islander Race/ethnicity minority: <ul style="list-style-type: none"> <li>– Black or African-American</li> <li>– American Indian or Alaskan</li> <li>– Biracial or Multiracial</li> <li>– Combined race/ethnicity minority</li> </ul>

**Research Questions, Null Hypotheses, and Associated Data Analysis Procedures**

Data analysis was conducted using Pearson's chi-square test for association for questions 1, 2, 3, and 4. Pearson's chi-square test for association was selected based on the independent variables, each being nominal. The response rate for the ACHA NCHA II was 17%. Peer-reviewed journals with survey responses, similar to the ACHA NCHA II, typically have a response rate of less than 50 percent (Privitera, 2017). The research questions null ( $H_o$ ) and alternative ( $H_a$ ) hypotheses are:

1. Is there a significant association among university students' overwhelming anxiety, academic performance, and suicidal ideation?

$H_a$ : There is a significant association among university students' overwhelming anxiety, academic performance, and suicidal ideation.

$H_o$ : There is no significant association among university students' overwhelming anxiety, academic performance, and suicidal ideation.

Statistical test: 2x2x2 Pearson's chi-square test for association.

2. Are university students' overwhelming anxiety dependent on their self-harming status?

$H_a$ : University students' overwhelming anxiety is dependent on their self-harming status.

$H_o$ : University students' overwhelming anxiety is not dependent on their self-harming status.

Statistical test: 2x3 Pearson's chi-square test for association.

- 2a. Are self-harming university students' overwhelming anxiety dependent on their graduate status?



H<sub>a</sub>: University students' overwhelming anxiety is dependent on their graduate status.

H<sub>0</sub>: University students' overwhelming anxiety is not dependent on their graduate status.

Statistical test: 2x2 Pearson's chi-square test for association.

2b. Are self-harming university students' overwhelming anxiety dependent on their gender?

H<sub>a</sub>: University students' overwhelming anxiety is dependent on their gender.

H<sub>0</sub>: University students' overwhelming anxiety is not dependent on their gender.

Statistical test: 2x3 Pearson's chi-square test for association.

2c. Are self-harming university students' overwhelming anxiety dependent on their sexual orientation?

H<sub>a</sub>: University students' overwhelming anxiety is dependent on their sexual orientation.

H<sub>0</sub>: University students' overwhelming anxiety is not dependent on their sexual orientation.

Statistical test: 2x4 Pearson's chi-square test for association.

2d. Are self-harming university students' overwhelming anxiety dependent on their race/ethnicity?

H<sub>a</sub>: University students' overwhelming anxiety is dependent on their race/ethnicity.

H<sub>0</sub>: University students' overwhelming anxiety is not dependent on their race/ethnicity.

Statistical test: 2x4 Pearson's chi-square test for association.

3. Is anxiety's impact on academic performance in university students dependent on their self-harming status?

H<sub>a</sub>: The anxiety's impact on university students' academic performance is dependent on their self-harming status.

H<sub>0</sub>: The anxiety's impact on university students' academic performance is not dependent on their self-harming status.

Statistical test: 2x3 Pearson's chi-square test for association.

- 3a. Is anxiety's impact on academic performance dependent on graduate status in self-harming university students?

H<sub>a</sub>: The anxiety's impact on university students' academic performance is dependent on their graduate status.

H<sub>0</sub>: The anxiety's impact on university students' academic performance is not dependent on their graduate status.

Statistical test: 2x2 Pearson's chi-square test for association.

- 3b. Is anxiety's impact on academic performance dependent on gender in self-harming university students?

H<sub>a</sub>: The anxiety's impact on university students' academic performance is dependent on their gender.

H<sub>0</sub>: The anxiety's impact on university students' academic performance is not dependent on their gender.

Statistical test: 2x3 Pearson's chi-square test for association.

3c. Is anxiety's impact on academic performance dependent on sexual orientation in self-harming university students?

H<sub>a</sub>: The anxiety's impact on university students' academic performance is dependent on their sexual orientation.

H<sub>0</sub>: The anxiety's impact on university students' academic performance is not dependent on their sexual orientation.

Statistical test: 2x4 Pearson's chi-square test for association.

3d. Is anxiety's impact on academic performance dependent on race/ethnicity in self-harming university students?

H<sub>a</sub>: The anxiety's impact on university students' academic performance is dependent on their race/ethnicity.

H<sub>0</sub>: The anxiety's impact on university students' academic performance is not dependent on their race/ethnicity.

Statistical test: 2x4 Pearson's chi-square test for association.

4. Are university students' suicidal ideation dependent on their self-harming status?

H<sub>a</sub>: University students' suicidal ideation is dependent on their self-harming status.

H<sub>0</sub>: University students' suicidal ideation is not dependent on their self-harming status.

Statistical test: 2x3 Pearson's chi-square test for association.

4a. Are self-harming university students' suicidal ideation dependent on their graduate status?

H<sub>a</sub>: University students' suicidal ideation is dependent on their graduate status.

H<sub>0</sub>: University students' suicidal ideation is not dependent on their graduate status.

Statistical test: 2x2 Pearson's chi-square test for association.

4b. Are self-harming university students' suicidal ideation dependent on their gender?

H<sub>a</sub>: University students' suicidal ideation is dependent on their gender.

H<sub>0</sub>: University students' suicidal ideation is not dependent on their gender.

Statistical test: 2x3 Pearson's chi-square test for association.

4c. Are self-harming university students' suicidal ideation dependent on their sexual orientation?

H<sub>a</sub>: University students' suicidal ideation is dependent on their sexual orientation.

H<sub>0</sub>: University students' suicidal ideation is not dependent on their sexual orientation.

Statistical test: 2x4 Pearson's chi-square test for association.

4d. Are self-harming university students' suicidal ideation dependent on their race/ethnicity?

H<sub>a</sub>: University students' suicidal ideation is dependent on their race/ethnicity.

H<sub>0</sub>: University students' suicidal ideation is not dependent on their race/ethnicity.

Statistical test: 2x4 Pearson's chi-square test for association.

### **Data Collection**

The following information details the administrative process of collecting the data:

1. On January 13, 2019, my membership to the American College Health Association was renewed to allow access to their database.

2. On January 18, 2019, I submitted the ‘Data Use Request Form’ to the ACHA for approval (Appendix A).
3. Prior to exploring the data, an IRB proposal was sent to the George Fox University IRB committee on January 30, 2019 (Appendix B).
4. IRB approval was received February 1, 2019. The IRB approval can be found in Appendix 1 (Appendix C).
5. ACHA approval was received on March 14, 2018 with specific guidelines for citation and data use outlined in the approval letter (Appendix D).
6. The dataset file was sent in an IBM SPSS Statistics formatted file for research on March 14, 2019.

### **Role of the Researcher**

This research was completed in partial fulfillment of a Doctor of Education degree. In addition to being enrolled as a graduate student at George Fox University, the researcher also has a master’s degree in addiction counseling. During this program, the researcher became interested in studying the role of self-harm in educational settings; however, the researcher quickly realized there was a gap in self-harm research with universities, and specifically graduate student populations. This project assists in furthering the researcher’s understanding of the impact of self-harm, anxiety, and suicidal ideation. This research has potential to be a catalyst for increased dialogue, training, and resources for self-harming students on university campuses.

### **Research Ethics**

The ACHA protected the anonymity of the participants by using identification numbers rather than participant names. Because the data has already been collected by the ACHA, the researcher submitted an IRB form to the review committee at George Fox University (see

Appendix B). Furthermore, the survey distributed by the ACHA included a large variety of mental, physical, and sexual health item responses that could affect individual privacy and confidentiality. In adherence to The Data Protection Act of 1998, the ACHA is required to specifically ask participants if they would be amenable to archival of their response data and made available for future research. The ACHA includes an informed consent form with their survey instructions that can be tailored to each individual university (see Appendix C). The researcher is currently an ACHA member. Only members of the ACHA are granted data access.

An additional ethical concern is researcher bias. The researcher's clinical counseling internship for a master's degree in addiction studies can bias data interpretation. While the data has been collected by the ACHA, confirmation bias could potentially impact the researcher's evaluation and interpretation of the data based on previous clinical interactions with patients who self-harm. To decrease this bias, the researcher consistently re-examined impressions of respondents and confront pre-existing assumptions and hypotheses. A final approach to minimizing bias and researcher assumptions includes working with a faculty committee that will review the research and challenge any assumptions that may identify professional or ethical conflict.

### **Potential Implications of this Research**

The importance of educator awareness of self-harm in student populations is imperative due to increased prevalence rates. Graduate students are often unable to maintain a healthy balance of their personal life due to the additional stress and reported detachment from sociocultural activities aimed at undergraduate students (Wyatt & Oswalt, 2013). Educators, mental health counselors, and administrative staff require increased training due to lack of

comfort and experience with students who engage in self-harm (Roth, Leavey, & Best, 2008; Whitlock et al., 2009).

Berger, Hasking, and Reupert (2014) focused on the perceived level of preparation with self-harm training and intervention strategies by educators, school leaders, mental health workers and support/administrative staff members. When surveyed on the desire for training in self-harm, 100% of support/administrative staff stated the need for additional training, although 26.3% reported completing previous self-harm training courses (Berger et al., 2014). School counselors often have the closest access to students. Murray et al. (2005) conducted an online study that assessed the number of students who actively sought out a mental health care professional to discuss non-suicidal self-injury and over two-thirds (68.8%) of respondents reported seeking a health care professional. Of the students in the online study, 43% consulted a school counselor, compared to 32.8% consulting a physician (Murray et al., 2005). Self-harm is a campus mental health concern, as well as a public health concern. This research has the potential to add to the discussion and resources to meet the mental health needs of self-harming university students.

## **Chapter Four**

### **Results**

The purpose of this research was to explore self-harm, anxiety, and suicidal ideation in university student populations using secondary data from the ACHA NCHA II survey. Additionally, this research explored these variables with the covariates graduate status, gender, sexual orientation, and race/ethnicity. Chapter Four includes results from the secondary data obtained from the ACHA NCHA II that was administered in the 2018 Spring term. The data file was organized into IBM SPSS Statistics for Macintosh, version 25 (IBM Corporation, 2017). The dataset was cleaned and prepared for analysis. All responses were nominal variables. Each ACHA NCHA II item used in this study varied having between five to ten response options. Responses were recoded to avoid violating the two assumptions of the Pearson's chi-square test for independence outlined by Laerd Statistics (2015) and to increase the sample sizes of the covariate minority groups.

Originally, this research aimed to focus exclusively on graduate students; however, covariate groups were underrepresented, especially the gender, sexual orientation, and race/ethnicity minority groups. To account for smaller group sizes, undergraduate student responses were included in this research. The inclusion of undergraduate data increased the minority group sizes and provided more thorough analyses of mental health issues in these groups.

### **Sample Demographics**

This secondary research included undergraduate and graduate students from 140 universities across the United States with 88,178 total responses. The universities self-selected to administer the ACHA NCHA II. Although participating universities had self-selected, the



students in each university were randomly sampled. Table 5 shows the descriptive statistics for self-harm, overwhelming anxiety, anxiety's impact on academic performance, and suicidal ideation. Missing data from each response is also displayed in Table 5. Enders (2003) identified that a missing data rate of 15% was common in educational psychology studies. Since this is extant data, it is unknown why the data are missing; although the social stigma of mental health issues might also be a factor in the missing responses. However, upon examination, it is evident that anxiety's impact on academic performance group contained the largest percentage of missing data (1.83%) of these four variables, suggesting there may be a link between these two variables. Additionally, the covariates in this research study include graduate status, gender, sexual orientation, and race/ethnicity. Table 6 shows the demographics of the operationalized covariates.

Table 4

*Sample Demographics for Self-harm, Overwhelming Anxiety, Anxiety's Impact on Academic Performance, and Suicidal Ideation*

Variable	Frequency	Frequency %
Self-harm		
SH-	67,302	76.33%
SH12-	13,165	14.93%
SH12+	6,788	7.70%
Missing data	923	1.05%
Total	88,178	100.00%
Overwhelming anxiety		
OA12-	31,895	36.17%
OA12+	55,346	62.77%
Missing data	937	1.06%
Total	88,178	100.00%
Anxiety's impact on academic performance		
AA-	63,655	72.19%
AA+	22,909	25.98%
Missing data	1,614	1.83%
Total	88,178	100.00%
Suicidal ideation		
SI12-	76,666	86.94%
SI12+	10,547	11.96%
Missing data	965	1.09%
Total	88,178	100.00%

*Note.* SH- = No history of self-harm; SH12- = No self-harm in the past 12 months; SH12+ = Self-harmed within the past 12 months; OA12- = Never experienced/no overwhelming anxiety in the past 12 months; OA12+ = Has experienced overwhelming anxiety in the past 12 months; AA12- = Anxiety has not impacted academic performance; AA12+ = Anxiety has impacted academic performance; SI12- = No history/No suicidal ideation in the past 12 months; SI12+ = Suicidal ideation within the past 12 months.

Table 5  
*Covariate Demographics*

Variable	Count	Count %
Graduate Status		
Undergraduate	73,912	83.82%
Graduate	12,569	14.25%
Missing Data	1,697	1.92%
Total	88,178	100.00%
Gender		
Woman	60,396	68.49%
Man	25,226	28.61%
Gender Minority	945	1.07%
Missing Data	1,611	1.83%
Total	88,178	100.00%
Sexual Orientation		
Bisexual	6,258	7.10%
Homosexual	2,868	3.25%
Straight	72,035	81.69%
Sexual orientation minority	5,514	6.25%
Missing Data	1,503	1.70%
Total	88,178	100.00%
Race/ethnicity		
White	55,949	63.45%
Hispanic or Latino/a	15,363	17.42%
Asian or Pacific Islander	12,514	14.19%
Racial/ethnic minority	12,680	14.38%

*Note:* The ACHA NCHA II uses the term woman and man to refer to gender; rather than male or female. This study also used the terms woman and man to keep with the fidelity of terms of the ACHA NCHA II.

### Assumptions

This section addressed and reviewed the assumptions for Pearson's chi-square test for association. Associations ensure the correct conclusions are drawn in this study. Two assumptions for a chi-square test for association are outlined by Laerd Statistics (2015) and are addressed below.

**Assumption one – two variables (ordinal or nominal).** Question 1 included a three-way assessment using two variables in three separate chi-square tests. The three variables included overwhelming anxiety, the anxiety's impact on academic performance, and suicidal ideation and are all nominal variables.

Questions 2, 3, and 4 each have two nominal variables. In question 2, the variables were overwhelming anxiety and self-harm. Anxiety impacting academic performance and self-harm were the two variables for question 3. In question 4, suicidal ideation and self-harm are the two nominal variables.

The four covariates (graduate status, gender, sexual orientation, and race/ethnicity) in questions 2a, 2b, 2c, and 2d also meet this assumption. These covariates were operationalized to nominal variables and used in the crosstabulation with the overwhelming anxiety (nominal) variable. Questions 3a, 3b, 3c, and 3d also incorporated the same covariates in a crosstabs function with the anxiety's impact on academic performance (nominal) variable. Similarly, questions 4a, 4b, 4c, and 4d were placed in a crosstabs function with suicidal ideation (nominal) variable.

**Assumption two – two or more categorical, independent groups.** Groups in this research were categorical as they lacked an intrinsic mathematical order. Each variable in this study was independent from the other variables. The categorical, independent groups ranged from two groups to four groups. For example, overwhelming anxiety had two groups: students who have never experienced anxiety/not experienced in the past 12 months (OA12-) and students who have experienced overwhelming anxiety in the past 12 months (OA12+). Four covariates were also explored in each overwhelming anxiety group: graduate status, gender, sexual orientation, and race/ethnicity.

All of the assumptions for each research question were satisfied, as outlined by Laerd Statistics (2015). Each research questions included two nominal variables and satisfied the first assumption. The second assumption was also satisfied as all groups were categorical and independent.

### Research Questions

Each research question in this chapter included a written discussion of results and a table of results. Due to the large sample size, even small differences between the operationalized groups can be statistically significant. In order to address this, any statistically significant associations were reported based on an alpha value that is less than .01. Effect sizes were reported using the phi coefficient for binomial variables and Cramer's  $V$  for multinomial variables. The parameters for the phi coefficient and Cramer's  $V$  were based on Cohen's effect sizes and degrees of freedom (Gravetter & Wallnau, 2016). Effect size was interpreted using the phi coefficient for 2x2 crosstabs and Cramer's  $V$  for larger crosstabs. The effect sizes as outlined by Cohen (1988) in this study are defined in Table 7. Based on the degrees of freedom and either phi coefficient or Cramer's  $V$ . The following sections report the findings of this study.

Table 7

*Effect Sizes for Chi-square Test Based on Phi Coefficient or Cramer's  $V$*

df	Small	Medium	Large
1	0.10	0.30	0.50
2	0.07	0.21	0.35
3	0.06	0.17	0.29

**Research question 1.** Is there a significant association among university students' overwhelming anxiety, academic performance, and suicidal ideation?

A three-way chi-square test for association for each of the three variables was conducted. The first 2x2 chi-square test found a statistically significant association and medium effect size between overwhelming anxiety and the anxiety's impact on academic performance,  $\chi^2$  (1,  $N =$

86,281) = 12,313.83,  $p < .001$ ,  $\phi = .378$ . The second 2x2 chi-square test found a statistically significant association and small effect size between the anxiety's impact on academic performance and suicidal ideation,  $\chi^2 (1, N = 86,250) = 5,101.38$ ,  $p < .001$ ,  $\phi = .243$ . The third 2x2 chi-square test also found a statistically significant association and small effect size between overwhelming anxiety and suicidal ideation,  $\chi^2 (1, N = 87,035) = 5,207.07$ ,  $p < .001$ ,  $\phi = .245$ . All three variables had a  $p$ -value of less than .001. Therefore, the null hypotheses that no associations exist among overwhelming anxiety, the anxiety's impact on academic performance, and suicidal ideation was rejected.

The rejection of the null hypotheses and the associated effect sizes suggested that these three variables are somehow related. In other words, university students who report overwhelming anxiety will likely also report that their academic performance has been affected by their anxiety. The level of association between overwhelming anxiety and anxiety's impact on academic performance had the largest effect size ( $\phi = .378$ ) of the three chi-square tests. Students who report anxiety affecting their academics were also more likely to report experiencing suicidal ideation, as opposed to students who report no anxiety or report that their anxiety did not interfere with academic performance. Finally, students who reported suicidal ideation were also likely to report overwhelming anxiety; whereas students that had not experienced overwhelming anxiety in the past year were not as likely to also report having experienced suicidal ideation.

**Research question 2.** Are university students' overwhelming anxiety dependent on their self-harming status?

A 2x3 chi-square test of independence was performed to examine the relationship between overwhelming anxiety and self-harm in university students (see Table 8). The contingency table analysis revealed a statistically significant association between the variables

with a moderate effect size,  $\chi^2 (2, N = 87,075) = 5,340.09, p < .001, V = .248$ . The null hypothesis that no association exists between overwhelming anxiety and self-harm in university students was rejected.

The rejection of the null hypothesis indicated that there is a relationship between these two variables. This is to say that students' overwhelming anxiety frequencies drastically vary in each of the self-harming groups. Students in the SH- group had the lowest reports of overwhelming anxiety; compared to students with any history of self-harm. Students in the SH12- group had less reported anxiety than students in the SH12+ group. This suggested that the more recent the self-harm episode, the more likely the student would have reported overwhelming anxiety.

Table 8

*Chi-square Test and Descriptive Statistics for Overwhelming Anxiety and Self-harm*

		Self-harm		
		SH-	SH12-	SH12+
OA12-	Count	28,782	2,608	451
	% within SH	42.85%	19.85%	6.66%
OA12+	Count	38,380	10,532	6,322
	% within SH	57.15%	80.15%	93.34%

**Research question 2a.** Are self-harming university students' overwhelming anxiety dependent on their graduate status?

To determine if overwhelming anxiety was dependent on graduate status in the self-harming university student sample, a 2x2 crosstabulation using chi-square analysis for association was conducted. The 2x2 contingency table analysis (see Table 9) for the SH12- group revealed a statistically significant association with a small effect size between overwhelming anxiety and graduate status,  $\chi^2 (1, N = 13,003) = 28.99, p = < .001, \phi = -.047$ . The SH12+ group did not have a statistically significant association between overwhelming anxiety

and graduate status,  $\chi^2 (1, N = 6,994) = 0.91, p = .340$ . The null hypothesis that overwhelming anxiety is not associated with graduate status in the SH12- group was rejected. However, in the SH12+ group, the association between overwhelming anxiety and graduate status is not significant and the null hypothesis was accepted.

The rejection of the null hypothesis in the SH12- found that reported overwhelming anxiety varies by graduate status in this group. Undergraduate students in the SH12- group reported higher rates of overwhelming anxiety than graduate students. However, the null hypothesis was accepted in the SH12+ group. This revealed that undergraduates and graduate students who have self-harmed in the past year reported similar rates of overwhelming anxiety.

*Chi-square Test for Overwhelming Anxiety in Self-harming Students Based on Graduate Status*

		Graduate Status	
		Undergraduate	Graduate
SH-	OA12-	23,620	4,685
	% within graduate status	42.48%	45.35%
	OA12+	32,252	5,646
	% within graduate status	57.72%	54.65%
SH12-	OA12-	2,152	419
	% within graduate status	19.04%	24.62%
	OA12+	9,149	1,283
	% within graduate status	80.96%	75.38%
SH12+	OA12-	420	24
	% within graduate status	6.71%	5.53%
	OA12+	5,840	410
	% within graduate status	93.29%	95.47%



**Research question 2b.** Are self-harming university students' overwhelming anxiety dependent on their gender?

A 2x3 crosstabulation using chi-square analysis for association was completed to explore whether self-harming university students' overwhelming anxiety was associated with their gender (see Table 10). The contingency table analysis for the SH12- group revealed a statistically significant relationship between overwhelming anxiety and gender with a small effect size,  $\chi^2 (2, N = 12,881) = 421.99, p < .001, V = .181$ . The null hypothesis that overwhelming anxiety is not associated with gender is rejected in the SH12- group. The contingency table analysis for the SH12+ group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (2, N = 6,548) = 94.65, p < .001, V = .120$ . The null hypothesis that overwhelming anxiety is not associated with gender is rejected in the SH12+ group.

The rejection of the null hypothesis in the SH12- and SH12+ groups identified that overwhelming anxiety varied based on gender. Students with a history of self-harm (SH12- and SH12+ group) in the gender minority group reported more recent overwhelming anxiety. Men had the lowest rates of reported overwhelming anxiety. In the SH12+ group 87.05% of men, 94.49% of women, and 97.47% of gender minority respondents identified experiencing overwhelming anxiety in the past twelve months. The group differences, though different, are distressingly high.

Table 10

*Chi-square Test for Overwhelming Anxiety in Self-harming Students Based on Gender*

		Gender		
		Woman	Man	Gender minority
SH-	OA12-	16,690	11,763	67
	% within gender	37.17%	55.23%	20.36%
	OA12+	28,211	9,536	262
	% within gender	62.83%	44.77%	79.64%
SH12-	OA12-	1,666	863	39
	% within gender	16.57%	34.62%	11.78%
	OA12+	8,391	1,630	292
	% within gender	83.43%	65.38%	88.22%
SH12+	OA12-	278	159	7
	% within gender	5.51%	12.95%	2.53%
	OA12+	4,765	1,069	270
	% within gender	94.49%	87.05%	97.47%

**Research question 2c.** Are self-harming university students' overwhelming anxiety dependent on their sexual orientation?

A 2x4 crosstabulation using chi-square analysis for association was completed to explore if self-harming university students' overwhelming anxiety was dependent on their sexual orientation (see Table 11). The contingency table analysis for the SH12- group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 12,970) = 238.88, p < .001, V = .136$ . The null hypothesis that overwhelming anxiety is not associated with sexual orientation in the SH12- group was rejected. The contingency table analysis for the SH12+ group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 6,641) = 61.79, p < .001, V = .096$ . The null hypothesis that overwhelming anxiety is not associated with sexual orientation in the SH12+ group was rejected.

The rejection of the null hypothesis in the SH12- and SH12+ groups determined that overwhelming anxiety varied based on sexual orientation. In both the SH12- and SH12+ group, heterosexual students had the lowest frequency of overwhelming anxiety in the past twelve months followed by homosexuals, bisexuals, and the gender minority group. These differences suggested that bisexual or sexual minority orientation students had the highest likelihood for experiencing overwhelming anxiety, followed by homosexual students and heterosexual students.

Table 11  
*Chi-square Test for Overwhelming Anxiety in Self-harming Students Based on Sexual Orientation*

		Sexual Orientation			
		Bisexual	Homosexual	Heterosexual	Sexual orientation minority
SH-	OA12-	789	625	26,314	729
	% within sexual orientation	24.98%	33.49%	44.83%	26.39%
	OA12+	2,369	1,241	32,381	2,033
	% within sexual orientation	75.02%	66.51%	55.17%	73.61%
SH12-	OA12-	221	105	2,069	164
	% within sexual orientation	11.72%	17.33%	23.28%	10.30%
	OA12+	1,665	501	6,817	1,428
	% within sexual orientation	88.28%	82.67%	76.72%	89.70%
SH12+	OA12-	41	20	339	40
	% within sexual orientation	3.50%	5.22%	8.58%	3.53%
	OA12+	1,132	363	3,612	1,094
	% within sexual orientation	96.50%	94.78%	91.42%	96.47%

**Research question 2d.** Are self-harming university students' overwhelming anxiety dependent on their race/ethnicity?

A 2x4 crosstabulation using chi-square analysis for association was completed to examine if self-harming university student's overwhelming anxiety was associated with their race/ethnicity (see Table 12). The contingency table analysis for the SH12- group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 13,140) = 85.00, p < .001, V = .080$ . Therefore, the null hypothesis that no association exists between overwhelming anxiety and race/ethnicity in the SH12- was rejected. The contingency table analysis for the SH12+ group revealed no statistically significant relationship between these two variables,  $\chi^2 (3, N = 6,773) = 10.31, p = .016$ . Therefore, the null hypothesis that no association exists between overwhelming anxiety and race/ethnicity in the SH12+ was accepted.

The rejection of the null hypothesis in the SH12- concludes that reported overwhelming anxiety varies by race/ethnicity in this group. White students in the SH12- group had the highest frequency of experiencing overwhelming anxiety in the past year (81.96%), followed by the race/ethnicity minority group (81.12%), Hispanic or Latino/a (78.10%), and the Asian or Pacific Islander group (72.02%). However, the null hypothesis was accepted in the SH12+ group. This suggests that race/ethnicity does not impact the likelihood of experiencing overwhelming anxiety when a student has self-harmed in the past 12 months. Race/ethnicity appears to have a larger impact over time in different race/ethnicities with a history of self-harm.

Table 12

*Chi-square Test for Overwhelming Anxiety in Self-harming Students Based on Race/Ethnicity*

		Race/Ethnicity			
		White	Hispanic or Latino/a	Asian/Pacific Islander	Race/ethnicity minority
SH-	OA12-	16,092	4,850	4,296	3,544
	% within race/ethnicity	41.86%	43.41%	46.95%	42.19%
	OA12+	22,347	6,323	4,854	4,856
	% within race/ethnicity	58.14%	56.59%	53.05%	57.81%
SH12-	OA12-	1,431	409	422	346
	% within race/ethnicity	18.04%	21.90%	27.98%	18.88%
	OA12+	6,500	1,459	1,086	1,487
	% within race/ethnicity	81.96%	78.10%	72.02%	81.12%
SH12+	OA12-	265	64	67	55
	% within race/ethnicity	6.27%	7.28%	9.23%	5.83%
	OA12+	3,960	815	659	888
	% within race/ethnicity	93.73%	92.72%	90.77%	94.17%

**Research question 3.** Is anxiety's impact on academic performance in university students dependent on their self-harming status?

A 2x3 Pearson's chi-square test for association was run to explore if an association exists between the anxiety's impact on academic performance and self-harming university students (see Table 13). The contingency table analysis revealed a statistically significant association between the variables with a moderate effect size,  $\chi^2 (2, N = 86,291) = 4,747.99, p < .001, V = .235$ . The null hypothesis that the anxiety's impact on academic performance is not associated with self-harm was rejected.

The rejection of the null hypothesis suggested that a relationship exists between these two variables. Students' anxiety impacted their academic performance differently in each of the self-harming groups. Students in the SH- group have the lowest reports of anxiety impacting their academic performance; whereas students in the SH12+ group were two and a half times more

likely to identify anxiety as a contributor to poor academic performance than students in the SH-group. These findings suggested that the more recent the self-harm episode, the more likely the student is to report their academics have been affected by anxiety.

Table 13

*Chi-square Test and Descriptive Statistics for Anxiety Impacting Academic Performance and Self-harm*

		Self-harm		
		SH-	SH12-	SH12+
AA-	Count	52,524	7,798	3,133
	% within SH	78.93%	59.87%	46.62%
AA+	Count	14,021	5,227	3,588
	% within SH	21.06%	40.13%	53.38%

*Note.* AA- = Anxiety has not impact academic performance in the past 12 months; AA+ = Anxiety has impacted academic performance in the past 12 months.

**Research question 3a.** Is anxiety's impact on academic performance dependent on graduate status in self-harming university students?

A 2x2 crosstabulation using chi-square analysis for association was run to determine if an association exists between anxiety impacting academic performance in self-harming students based on their graduate status (see Table 14). The 2x2 contingency table analysis for the SH12-group revealed a statistically significant association with a small effect size between the anxiety's impact on academic performance and graduate status,  $\chi^2 (1, N = 12,900) = 129.07, p < .001, \phi = -.100$ . The 2x2 contingency table analysis for the SH12+ group also had a statistically significant association between anxiety impacting academic performance and graduate status with a small effect size,  $\chi^2 (1, N = 6,654) = 37.09, p < .001, \phi = -.075$ . The null hypothesis was rejected in the SH12- and SH12+ groups.

The rejection of the null hypothesis in the SH12- and SH12+ identified that undergraduates and graduate students who self-harmed reported different levels of anxiety's impact on their academic performance. Undergraduate students in the SH12- group were more

likely to report their anxiety had negatively impacted their academics (42.03%) compared to graduate students (27.49%) in the same group. This is also true of the SH12+ group where 54.43% of undergraduates reported negative academic outcomes due to their anxiety; whereas, 39.25% of graduates cited anxiety as a source for negative academic performance. Anxiety's impact on academic performance based on graduate status is unique compared to findings in overwhelming anxiety and suicidal ideation. This was the only case where a difference between groups existed in the SH12+ groups based on graduate status.

Table 14

*Chi-square Test for Anxiety's Impact on Academic Performance in Self-harming Students Based on Graduate Status*

		Graduate Status	
		Undergraduate	Graduate
SH-	AA-	43,087	8,726
	% within graduate status	77.71%	85.10%
	AA+	12,361	1,528
	% within graduate status	22.29%	14.90%
SH12-	AA-	6,500	1,224
	% within graduate status	57.97%	72.51%
	AA+	4,712	464
	% within graduate status	42.03%	27.49%
SH12+	AA-	2,837	260
	% within graduate status	45.57%	60.75%
	AA+	3,389	168
	% within graduate status	54.43%	39.25%

*Note.* AA- = Academic performance not impacted by anxiety; OA12+ = Anxiety impacted academic performance.

**Research question 3b.** Is anxiety's impact on academic performance dependent on gender in self-harming university students?

A 2x3 crosstabulation using chi-square analysis for association was completed to explore if self-harming university students' academic performance impacted by anxiety was associated with their gender (see Table 15). The contingency table analysis for the SH12- group revealed a statistically significant relationship between the anxiety's impact on academic performance and gender with a small effect size,  $\chi^2 (2, N = 12,779) = 145.24, p < .001, V = .107$ . The contingency table analysis for the SH12+ group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (2, N = 6,507) = 45.58, p < .001, V = .084$ . The null hypothesis that overwhelming anxiety is not associated with gender was rejected in the SH12- and SH12+ groups.

The rejection of the null hypothesis in the SH12- and SH12+ groups determined that anxiety's impact on academic performance did vary by gender. Students with a history of self-harm (SH12- and SH12+ group) in the gender minority group were most likely to report anxiety negatively impacting their academics. Men were the least likely group to report anxiety negatively impacting academics. The gender minority group had similar frequencies of anxiety negatively impacting academics in the SH12- and SH12+ groups.



Table 15

*Chi-square Test for Anxiety's Impact on Academic Performance in Self-harming Students Based on Gender*

		Gender		
		Woman	Man	Gender minority
SH-	AA-	34,179	17,761	198
	% within gender	76.66%	84.11%	61.11%
	AA+	10,409	3,356	126
	% within gender	23.34%	15.89%	38.89%
SH12-	AA-	5,804	1,727	148
	% within gender	58.14%	69.92%	45.26%
	AA+	4,178	743	179
	% within gender	41.86%	30.08%	54.74%
SH12+	AA-	2,270	671	110
	% within gender	45.24%	55.32%	39.86%
	AA+	2,748	542	166
	% within gender	54.76%	44.68%	60.14%

**Research question 3c.** Is anxiety's impact on academic performance dependent on sexual orientation in self-harming university students?

A 2x4 crosstabulation using chi-square analysis for association was completed to explore if self-harming university student's academic performance impacted by anxiety was associated with their sexual orientation (see Table 16). The contingency table analysis for the SH12- group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 12,866) = 172.92, p < .001, V = .116$ . The contingency table analysis for the SH12+ group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 6,507) = 79.61, p < .001, V = .110$ . The null hypothesis that overwhelming anxiety is not associated with sexual orientation was rejected in both the SH12- and SH12+ groups.

The rejection of the null hypothesis in the SH12- and SH12+ groups determined that anxiety's impact on academics fluctuated based on sexual orientation. In both the SH12- and SH12+ group, heterosexual students had the lowest frequency of overwhelming anxiety in the past 12 months followed by homosexual students. However, the sexual orientation minority group was most likely to have reported anxiety affecting their academics in the SH12- group and bisexual students were the most likely to have their academics affected by anxiety in the SH12+ group. These differences suggested students in the bisexual or sexual orientation minority groups had the highest likelihood of reporting they experienced overwhelming anxiety; whereas the lowest reported rates of academics impacted by anxiety were found in the homosexual and heterosexual groups.

Table 16

*Chi-square Test for Anxiety's Impact on Academic Performance in Self-harming Students Based on Sexual Orientation*

		Sexual Orientation			
		Bisexual	Homosexual	Straight	Sexual orientation minority
SH-	AA-	2,139	1,396	46,701	1,867
	% within sexual orientation	68.14%	75.46%	80.16%	68.16%
	AA+	1,000	454	11,559	872
	% within sexual orientation	31.86%	24.54%	19.84%	31.84%
SH12-	AA-	973	354	5,588	777
	% within sexual orientation	51.95%	58.90%	63.44%	49.05%
	AA+	900	247	3,220	807
	% within sexual orientation	48.05%	41.10%	36.56%	50.95%
SH12+	AA-	457	164	2,004	455
	% within sexual orientation	38.96%	43.04%	51.14%	40.34%
	AA+	716	217	1,915	673
	% within sexual orientation	61.04%	56.96%	48.86%	59.66%

**Research question 3d.** Is anxiety's impact on academic performance dependent on race/ethnicity in self-harming university students?

A 2x4 crosstabulation using chi-square analysis for association was completed to examine if self-harming university student's academic performance impacted by anxiety was associated with their race/ethnicity (see Table 17). The contingency table analysis for the SH12- group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 13,025) = 38.08, p < .001, V = .054$ . Therefore, the null hypothesis that no association exists between overwhelming anxiety and race/ethnicity in the SH12- was rejected. The contingency table analysis for the SH12+ group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 6,721) = 19.78, p < .001, V = .054$ . Therefore, the null hypothesis that no association exists between overwhelming anxiety and race/ethnicity in the SH12- and SH12+ groups was rejected.

The rejection of the null hypothesis in the SH12- and SH12+suggests that reported anxiety's impact on academics varied by race/ethnicity. In the SH12- and SH12+ group race/ethnicity minority students had the highest report of anxiety impacting their academics in the past year, followed by the White group, Hispanic or Latino/a group, and the Asian or Pacific Islander group. These findings identified that each race/ethnicity group's academics were affected differently by anxiety.

Table 17

*Chi-square Test for Anxiety's Impact on Academic Performance in Self-harming Students Based on Race/Ethnicity*

		Race/Ethnicity			
		White	Hispanic or Latino/a	Asian or Pacific Islander	Racial/ethnic minority
SH-	AA-	29,976	8,660	7,528	6,360
	% within race/ethnicity	78.75%	78.13%	82.85%	76.54%
	AA+	8,090	2,424	1,558	1,949
	% within race/ethnicity	21.25%	21.87%	17.15%	23.46%
SH12-	AA-	4,683	1,123	983	1,009
	% within race/ethnicity	59.60%	60.67%	65.80%	55.35%
	AA+	3,174	728	511	814
	% within race/ethnicity	40.40%	39.33%	34.20%	44.65%
SH12+	AA-	1,909	417	390	417
	% within race/ethnicity	45.51%	47.99%	53.94%	44.65%
	AA+	2,286	452	333	517
	% within race/ethnicity	54.49%	52.01%	46.06%	55.35%

**Research question four.** Are university students' suicidal ideation dependent on their self-harming status?

A 2x3 chi-square test of independence was performed to examine the relation between suicidal ideation and self-harm in university students (see Table 18). The contingency table analysis revealed a significant association between suicidal ideation and self-harm with large effect size,  $\chi^2 (2, N=87,177) = 16,968.83, p < .001, V = .441$ . Therefore, the null hypothesis that suicidal ideation is not associated with self-harm in university students was rejected.

The rejection of the null hypothesis concluded that there is a relationship between these two variables in the SH12- and SH12+ groups. Self-harming students' suicidal ideation percentage was threefold between these two groups. Nearly 60% of students in the SH12+ group reported having suicidal thoughts in the past year; whereas, only 18.78% of students in the SH12- group reported experiencing suicidal ideation during the same time period. These findings

indicate that the more recent the self-harm episode, the more likely the student was to experience suicidal ideation in the past twelve months.

Table 18

*Chi-square Test and Descriptive Statistics for Suicidal Ideation and Self-harm*

		Self-Harm		
		SH-	SH12-	SH12+
SH12-	Count	63,186	10,681	2,770
	% within SH	93.96%	81.2%	40.88%
SH12+	Count	4,064	2,470	4,006
	% within SH	6.04%	18.78%	59.12%

*Note.* SH12- = Never had suicidal ideation/not suicidal in the past 12 months; SH12+ = Suicidal in the past 12 months.

**Research question 4a.** Are self-harming university students' suicidal ideation dependent on their graduate status?

A 2x2 crosstabulation using chi-square analysis for association was run to determine if an association exists between suicidal ideation and graduate status in university students who self-harm (see Table 19). The 2x2 contingency table analysis for the SH12- group revealed a statistically significant association with a small effect size in these two variables,  $\chi^2 (1, N = 13,013) = 29.619, p = < .001, \phi = -.048$ . The contingency table analysis for the SH12+ group did not reveal a statistically significant relationship between these two variables,  $\chi^2 (1, N = 6,697) = 37.09, p = .162, \phi = -.017$ . Therefore, the null hypothesis was accepted.

The rejection of the null hypothesis in the SH12- indicates that suicidal ideation varies based on graduate status. A larger percentage of undergraduate students report suicidal ideation in the past twelve months in the SH12- and SH12+ groups. The null hypothesis was accepted in the SH12+ group, which suggests that risk of suicidal ideation demonstrated little variance between undergraduate and graduate students who self-harmed in the past twelve months. Undergraduate students with any history of self-harm were more likely to report suicidal

ideation; however, graduate students that had self-harmed in the past twelve months were more likely to consider suicide than graduates who had not self-harmed in the past twelve months.

Table 19

*Chi-square Test for Suicidal Ideation in Self-harming Students Based on Graduate Status*

		Graduate Status	
		Undergraduate	Graduate
SH-	SI12-	52,306	9,968
	% within graduate status	93.50%	96.37%
	SI12+	3,638	376
	% within graduate status	6.50%	3.63%
SH12-	SI12-	9,105	1,466
	% within graduate status	80.51%	86.03%
	SI12+	2,204	238
	% within graduate status	19.49%	13.97%
SH12+	SI12-	2,549	191
	% within graduate status	40.69%	44.11%
	SI12+	3,715	242
	% within graduate status	59.31%	55.89%

**Research question 4b.** Are self-harming university students' suicidal ideation dependent on their gender?

A 2x3 crosstabulation using chi-square analysis for association was completed to explore if self-harming university students' suicidal ideation was associated with their gender (see Table 20). The contingency table analysis for the SH12- group revealed a statistically significant relationship between the two variables with a small effect size  $\chi^2 (2, N = 12,892) = 52.87, p < .001, V = .064$ . Due to the low  $p$ -value in the SH12- group, the null hypothesis was rejected. The contingency table analysis for the SH12+ group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (2, N = 6,549) = 24.68, p < .001, V = .061$ , and the null hypothesis was rejected.

The rejection of the null hypothesis in the SH12- and SH12+ groups suggests that suicidal ideation does vary by gender. Gender minority students in the SH12- group were most likely to report suicidal ideation compared to men and women, respectively. The gender minority group had similar frequencies of anxiety negatively impacting academics in the SH12- and SH12+ groups. This suggests that group differences in suicidal ideation exist between males, females, and gender minority students who self-harmed in the past year.

Table 20

*Chi-square Test for Suicidal Ideation in Self-harming Students Based on Gender*

		Gender		
		Woman	Man	Gender minority
SH12-	SI12-	42,388	19,972	266
	% within gender	94.28%	93.64%	80.85%
	SI12+	2,572	1,356	63
	% within gender	5.72%	6.36%	19.15%
SH12-	SI12-	8,312	1,951	234
	% within gender	82.59%	78.17%	70.48%
	SI12+	1,752	545	98
	% within gender	17.41%	21.83%	29.52%
SH12+	SI12-	2,154	476	80
	% within gender	42.70%	38.73%	28.99%
	SI12+	2,890	753	196
	% within gender	57.30%	61.27%	71.01%

**Research question 4c.** Are self-harming university students' suicidal ideation dependent on their sexual orientation?

A 2x4 crosstabulation using chi-square analysis for association was completed to explore whether self-harming university students' suicidal ideation was associated with their sexual orientation (see Table 20). The contingency table analysis for the SH12- group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2(3, N = 12,980) = 134.65, p < .001, V = .102$ . The contingency table analysis for the SH12+ group

revealed a statistically significant relationship between suicidal ideation and sexual orientation with a small effect size,  $\chi^2(3, N = 6,645) = 71.47, p < .001, V = .104$ . The null hypothesis that overwhelming anxiety is not associated with sexual orientation was rejected in both the SH12- and SH12+ groups.

The rejection of the null hypothesis in the SH12- and SH12+ groups determined that suicidal ideation changes based on sexual orientation. In both the SH12- and SH12+ groups, heterosexual students had the lowest reported rates of suicidal ideation in the past twelve months (54.85%). Bisexual (65.99%), homosexual (65.45%), and sexual orientation minority (64.26%) groups had minute differences in suicidal ideation percentages within the SH12+ group. These differences suggest that non-heterosexual students were more likely to experience suicidal ideation when they have self-harmed in the past twelve months.

Table 21

*Chi-square Test for Suicidal Ideation in Self-harming Students Based on Sexual Orientation*

		Sexual Orientation			
		Bisexual	Homosexual	Straight	Sexual orientation minority
SH-	SH12-	2,715	1,652	55,777	2,400
	% within sexual orientation	85.92%	88.48%	94.90%	86.89%
	SH12+	445	215	3,000	362
	% within sexual orientation	14.08%	11.52%	5.10%	13.11%
SH12-	SH12-	1,426	473	7,457	1,185
	% within sexual orientation	75.49%	77.92%	83.87%	74.39%
	SH12+	463	134	1,434	408
	% within sexual orientation	24.51%	22.08%	16.13%	25.61%
SH12+	SH12-	400	132	1,784	406
	% within sexual orientation	34.01%	34.55%	45.15%	35.74%
	SH12+	776	250	2,167	730
	% within sexual orientation	65.99%	65.45%	54.85%	64.26%



**Research question 4d.** Are self-harming university students' suicidal ideation dependent on their race/ethnicity?

A 2x4 crosstabulation using chi-square analysis for association was completed to examine whether self-harming university students' suicidal ideation was associated with their race/ethnicity (see Table 22). The contingency table analysis for the SH12- group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 13,151) = 19.62, p < .001, V = .039$ . The contingency table analysis for the SH12+ group revealed a statistically significant relationship between these two variables with a small effect size,  $\chi^2 (3, N = 6,776) = 21.25, p < .001, V = .056$ . Therefore, the null hypothesis that no association exists between overwhelming anxiety and race/ethnicity in the SH12- and SH12+ groups was rejected.

The rejection of the null hypothesis in the SH12- and SH12+ groups supports the inference that suicidal ideation varied by race/ethnicity; however, the effect size was quite small in both the SH12- ( $V = .039$ ) and SH12+ ( $V = .056$ ) groups. The race/ethnicity minority group in the SH12- group had the highest frequency of experiencing suicidal ideation in the past year followed by the Asian or Pacific Islander group, White group, and the Hispanic or Latino/a group. This demonstrates that race/ethnicity and the likelihood of experiencing suicidal ideation are connected with a small association.

Table 22

*Chi-square Test for Suicidal Ideation in Self-harming Students Based on Race/Ethnicity*

		Race/Ethnicity			
		White	Hispanic or Latino/a	Asian/Pacific Islander	Racial/ethnic minority
SH-	SI12-	36,325	10,557	8,550	7,754
	% within race/ethnicity	94.39%	94.38%	93.27%	92.16%
	SI12+	2,158	629	617	660
	% within race/ethnicity	5.61%	5.62%	6.73%	7.84%
SH12-	SI12-	6,484	1,549	1,218	1,430
	% within race/ethnicity	81.72%	82.92%	80.66%	77.76%
	SI12+	1,450	319	292	409
	% within race/ethnicity	18.28%	17.08%	19.34%	22.24%
SH12+	SI12-	1,813	348	272	337
	% within race/ethnicity	42.87%	39.59%	37.52%	35.74%
	SI12+	2,416	531	453	606
	% within race/ethnicity	57.13%	60.41%	62.48%	64.26%

## Conclusion

This chapter analyzed the research findings, connected these findings to the research questions, and outlined the results. All research questions and results included in this chapter have been summarized in Table 23 below.

Table 23  
*Summary of Findings*

Research Question	Variables	Statistically Significant	Effect Size
1	OA x AA	Yes	$\phi = .378$
	AA x SI	Yes	$\phi = .243$
	OA x SI	Yes	$\phi = .245$
2	OA x SH	Yes	
2a	OA x graduate status (SH12-)	Yes	$\phi = -.047$
	OA x graduate status (SH12+)	<b>No</b>	$\phi = .012$
2b	OA x gender (SH12-)	Yes	$V = .181$
	OA x gender (SH12+)	Yes	$V = .120$
2c	OA x sexual orientation (SH12-)	Yes	$V = .136$
	OA x sexual orientation (SH12+)	Yes	$V = .096$
2d	OA x race/ethnicity (SH12-)	Yes	$V = .080$
	OA x race/ethnicity (SH12+)	<b>No</b>	$V = .039$
3	AA x SH	Yes	$V = .235$
3a	AA x graduate status (SH12-)	Yes	$\phi = -.100$
	AA x graduate status (SH12+)	Yes	$\phi = -.075$
3b	AA x gender (SH12-)	Yes	$V = .107$
	AA x gender (SH12+)	Yes	$V = .084$
3c	AA x sexual orientation (SH12-)	Yes	$V = .116$
	AA x sexual orientation (SH12+)	Yes	$V = .110$
3d	AA x race/ethnicity (SH12-)	Yes	$V = .054$
	AA x race/ethnicity (SH12+)	Yes	$V = .054$
4	SI x SH	Yes	$V = .441$
4a	SI x graduate status (SH12-)	Yes	$\phi = -.048$
	SI x graduate status (SH12+)	<b>No</b>	$\phi = -.017$
4b	SI x gender (SH12-)	Yes	$V = .064$
	SI x gender (SH12+)	<b>No</b>	$V = .061$
4c	SI x sexual orientation (SH12-)	Yes	$V = .102$
	SI x sexual orientation (SH12+)	Yes	$V = .104$
4d	SI x race/ethnicity (SH12-)	Yes	$V = .039$
	SI x race/ethnicity (SH12+)	Yes	$V = .056$

*Note:* OA = overwhelming anxiety; AA = anxiety's impact on academic performance; SI = suicidal ideation.

A relationship existed in each of the four covariates and anxiety's impact on academic performance; however, this was not synonymous for all covariates in the overwhelming anxiety and suicidal ideation variables. Rates of overwhelming anxiety and suicidal ideation did not vary based on graduate status in the SH12+. Additionally, in the SH12+ group, rates of overwhelming

anxiety did not differ significantly based on race/ethnicity group, nor did rates of suicidal ideation significantly change based on gender. This suggests that more variations exist within the SH12+ group compared to the SH12- group. These findings demonstrate inconsistencies based on both the covariates and mental health conditions. Chapter five includes a discussion of the results, implications for this study's findings, limitations, and future research suggestions.

## **Chapter Five**

### **Discussion and Conclusions**

#### **Introduction**

The purpose of this study was to explore the associations among self-harm, overwhelming anxiety, anxiety's impact on academic performance, and suicidal ideation in university student populations. Additionally, this research explored the mental health associations based on graduate status, gender, sexual orientation, and race/ethnicity. Secondary data from the ACHA-NCHA II survey was used to explore if associations exist among these mental health issues. A thorough understanding of mental health issues as they relate to graduate status, gender, sexual orientation, and race/ethnicity can assist campus mental health services in tailoring services for these groups. For example, campus mental health outreach for sexual orientation minority students could use the results in this study to support development of programs as increased anxiety and suicidal ideation was found in this minority group. This chapter contains discussion and future research possibilities to help answer the research questions:

1. Is there a significant association among university students' overwhelming anxiety, academic performance, and suicidal ideation?
2. Are university students' overwhelming anxiety dependent on their self-harming status?
  - 2a. Are self-harming university students' overwhelming anxiety dependent on their graduate status?
  - 2b. Are self-harming university students' overwhelming anxiety dependent on their gender?

- 2c. Are self-harming university students' overwhelming anxiety dependent on their sexual orientation?
- 2d. Are self-harming university students' overwhelming anxiety dependent on their race/ethnicity?
- 3. Is anxiety's impact on academic performance in university students dependent on their self-harming status?
  - 3a. Is anxiety's impact on academic performance dependent on graduate status in self-harming university students?
  - 3b. Is anxiety's impact on academic performance dependent on gender in self-harming university students?
  - 3c. Is anxiety's impact on academic performance dependent on sexual orientation in self-harming university students?
  - 3d. Is anxiety's impact on academic performance dependent on race/ethnicity in self-harming university students?
- 4. Are university students' suicidal ideation dependent on their self-harming status?
  - 4a. Are self-harming university students' suicidal ideation dependent on their graduate status?
  - 4b. Are self-harming university students' suicidal ideation dependent on their gender?
  - 4c. Are self-harming university students' suicidal ideation dependent on their sexual orientation?
  - 4d. Are self-harming university students' suicidal ideation dependent on their race/ethnicity?

## Discussion of Findings

The findings of this study raised mental health concerns surrounding university students with a history of self-harm. More students with a history of self-harm reported experiencing overwhelming anxiety, anxiety impacting their academic performance, and suicidal ideation compared to students without a history of self-harm. Is this enough to support increasing mental health services to be tailored for self-harming students? I believe the answer is yes. The motivation of the researcher to conduct this research was founded on experience with university students who have and continue to struggle with self-harm. Co-occurring mental health issues, such as anxiety and suicidal ideation, impact university students' ability to thrive in an academic environment, even after they stop self-harming. Rather than following the outline of analysis question by question, the researcher discussed overwhelming anxiety, anxiety's impact on academics, and suicidal ideation based on their self-harming history. The relationships will be discussed in light of covariate impacts from the following demographic variables: graduate status, gender, sexual orientation, and race/ethnicity. Each covariate section addresses overwhelming anxiety, anxiety's impact on academics, and suicidal ideation.

**Overwhelming anxiety.** Subtle differences existed based on the most recent episode of self-harm. These differences must be acknowledged when considering campus mental health outreach and the high possibility of co-occurring mental health concerns in these groups. Students who have not self-harmed in the past year have lower reports of overwhelming anxiety than the students who did self-harm in the past year. University students with any history of self-harm are more likely to report experiencing overwhelming anxiety compared to university students who have never self-harmed. The findings of this current research aligned with previous

research findings that reported increased anxiety in self-harming groups compared to non-self-harming groups (O'Connor et al., 2010; Ross & Heath, 2002).

Wilson and Deane (2010) reported that only a quarter of students seek out mental health care. In their study, students who harmed over 12 months ago, 80.15% reported overwhelming anxiety and 93.35% of students who self-harmed in the past year reported experiencing overwhelming anxiety. Wilson and Deane (2010) reported that 55% of students who self-harmed over a year ago and 69% of students self-harmed in the past year identified they would not actively seek help. This would suggest that the majority of self-harmers with overwhelming anxiety will not actively seek out mental health resources. Seeking help can be further hampered by the cultural stigma of self-harm.

Briere and Gil (1998) posited that the most common function of engaging in self-harm was affect regulation; that is, individuals will self-harm to placate feelings of anxiety, guilt, depression, and similar problems. Their study also identified that the students who self-harmed over a year ago experience less overwhelming anxiety than students who self-harmed in the past year. This suggests that, although an individual has stopped self-harming, they still have a higher risk of overwhelming anxiety than students who have never self-harmed. In a longitudinal study, Groshwitz et al. (2015) researched anxiety and depression in former adolescent self-harmers. Of the former adolescent self-harmers in the study by Groshwitz et al., (2015) 75% retained their anxiety into young adulthood. A high rate of anxiety appears to remain even after the individual is no longer self-harming; this is congruent with this current study's findings. A possible cause for retained anxiety is the lack of appropriate coping mechanisms for anxiety. Students who self-harmed over a year ago may still consider relapsing and self-harming again. This can reignite



feelings of anxiety that had previously been addressed by self-harming for affect regulation (Wilcox et al., 2012).

**Anxiety's impact on academic performance.** University students who have any history of self-harming behavior were more likely to report anxiety negatively affected their academic performance compared to students who have never self-harmed. Wyatt and Oswalt (2017) researched anxiety's impact on academic performance in undergraduate student populations and reported 43% of students who reported anxiety also reported anxiety negatively impacting their academic performance. In contrast to this study's findings, Andrews and Wilding (2016) evaluated anxiety in university students and also found no association or causation between anxiety and academic performance. Andrews and Wilding (2016) provided an explanation regarding literature inconsistencies, noting that "while anxiety produces worry which can affect processing efficiency, worry motivates individuals to use compensatory strategies which can often increase performance effectiveness" (p. 519). Their discussion surrounding anxiety as it relates to academic performance is suggestive of a spectrum. On one end of the spectrum anxiety can facilitate motivation to prepare and study, resulting in better academic performance; whereas, on the opposite end of the spectrum anxiety may stifle the student's attention span and ability to retain information (Wyatt et al., 2017). Hoff and Muehenkamp (2009) identified that self-harming students demonstrate higher levels of perfectionist tendencies and students who self-harm also report higher levels of anxiety (Ross & Heath, 2002). If a student with perfectionism tendencies experiences their grades beginning to slip, it is likely this will create more anxiety for the student to perform well, creating a vicious cycle. This current research has identified that students who self-harmed in the past year were two and a half times more likely to

report that their academics were negatively affected based on their anxiety than students without a history of self-harming.

**Suicidal ideation.** The Association for University and College Counseling Center Directors (AUCCD) reported that university counselling center directors estimated 25.2% of students experienced suicidal ideation (Reetz et al., 2016). This number was based on directors' case reports of students who had actively reached out to mental health services. Students with a history of self-harm were below this estimate; however, students who self-harmed in the past year surpassed this number with 59.12% reporting suicidal ideation in the past 12 months. Suicidal ideation and its connection with self-harm has been heavily debated (Carvalho et al., 2015; Hamza & Willoughby, 2014; Jacobson et al., 2008; Muehlenkamp & Gutierrez, 2004; Muehlenkamp et al., 2015; Turner et al., 2015). Self-harm has been identified as a coping strategy to reduce thoughts of suicide (Jacobson et al., 2008). Klonsky et al. (2016) noted that the main concern with suicidal ideation is the formation of a suicide plan. With close to two-thirds of students who self-harmed in the past year also reporting suicidal ideation, the potential for ideation to progress into attempting suicide is an overarching concern.

Consistent with this current study, Andover (2014) identified individuals who self-harm and are negative for BPD diagnosis report more suicidal ideation than participants that do not engage in self-harm. This current study is not suggesting a causal link that self-harm causes suicidal ideation or the reverse. For example, it is unlikely that all students who self-harmed were suicidal at the time of self-harming. Likewise, it is unlikely that all students who were suicidal used self-harm to negate thoughts of suicide.

In contrast to this current study's findings, self-harm has also been identified as having no association with suicidal ideation. Muehlenkamp, Cowles, and Gutierrez (2010) identified that "while NSSI [non-suicidal self-injury] and suicidal behavior can co-occur, a significant portion of those having engaged in NSSI deny current and past suicidal ideation as well as past attempts" (p. 237). Though self-harmers may have denied suicidal ideation in previous research, the findings in this current study have shown this is not the case, especially for students who reported self-harming in the past year. This current study found that suicidal ideation and self-harm are associated; however, establishing whether there is a causal link should be a consideration for future research.

**Graduate status.** The majority of participants were enrolled as undergraduates (85.31%) and graduate students accounted for 14.69% of this population. The following sections discuss the findings of overwhelming anxiety, anxiety's impact on academic performance, and suicidal ideation based on graduate status.

***Graduate status and overwhelming anxiety.*** Within the group of university students who have self-harmed in the past year, undergraduates reported higher rates of overwhelming anxiety compared to graduate students. Eisenberg et al. (2007) reported that undergraduates had higher reports of anxiety compared to graduate students, although this study did not assess self-harm. Bandelow and Michaelis (2015) also reported that anxiety in students who have not sought medical help may peak between childhood and young adulthood. This current study puts forth new information related to overwhelming anxiety in self-harming university students based on graduate status. Furthermore, this current study found that overwhelming anxiety in students who have not self-harmed in the past year varies by graduate status; however, overwhelming anxiety

appears to be consistently reported in undergraduate and graduate students who self-harmed in the past year.

***Graduate status and anxiety's impact on academic performance.*** Graduate status and overwhelming anxiety in self-harming individuals had mixed results in this current study. This current study found an association based on overwhelming anxiety and graduate status in university students who self-harmed in the past year; consequently, this study also found that overwhelming anxiety was reported by similar levels of undergraduate and graduate students who have self-harmed in the past year. Unlike overwhelming anxiety, anxiety's impact on academic performance found similar results based on graduate status in students who had and had not self-harmed in the past year. It is important to note that from a measurement perspective, 'anxiety's impact on academic performance' is distinct from 'academic performance anxiety'. Studies targeted at academic performance anxiety are plentiful; however, studies that evaluate anxiety from the context of mental health, as opposed to test or performance anxiety, are sparse. Oswalt and Wyatt (2013) reported similar findings to this current study that more undergraduates identified their anxiety negatively impacted their academic performance compared to graduate students. Oswalt and Wyatt did not operationalize the variable of anxiety's impact on academic performance; their study reported that graduates were more likely to report a disruption to thesis or dissertation compared to undergraduates. Based on the findings of this current study, fewer graduate students report negative academic outcomes due to anxiety compared to undergraduates. Students who have demonstrated high academic achievement, while not exempt from anxiety, have most likely developed coping mechanisms related to academic performance.

***Graduate status and suicidal ideation.*** Undergraduates were the majority (85.49%) when researching suicidal ideation in in this study compared to graduate students (14.51%).

Undergraduate students who have not self-harmed in the past year had a higher frequency of suicidal ideation compared to graduate students. This could be due to transitioning into a new academic and social environment, as many students have never lived away from home (Brandy & Penckofer, 2015; Wyatt et al., 2017).

Research that evaluated differences in graduate status related to suicidal ideation is sparse. Garcia-Williams, Moffitt, and Kaslow (2014) evaluated suicidal behavior specifically in graduate students and identified that 7.3% of graduate students reported experiencing suicidal ideation. The rates of suicidal ideation are higher in this current study with 13.97% of graduate students who self-harmed over a year ago and 55.89% of graduate students who have self-harmed in the past month reporting suicidal ideation within the past year. This difference is most likely due to this current study's inclusion of self-harming behavior. Self-harming behaviors have been identified as exhibiting a higher association with suicidal ideation (Klonsky et al., 2016). Whitlock et al. (2013) also investigated the connection between suicidal thoughts and behaviors (STB) and self-harm; their study identified that the risk for STB has nearly tripled in populations with a history of self-harm. Therefore, current self-harming students, regardless of graduate status demonstrated similar levels of suicidal ideation; however, undergraduate students were slightly more likely to experience suicidal ideation if they self-harmed over one year ago compared to graduate students.

**Gender.** The following sections will discuss the findings of overwhelming anxiety, anxiety's impact on academic performance, and suicidal ideation based on gender.

***Gender and overwhelming anxiety.*** The gender minority group who had not self-harmed in the past year had the highest report of overwhelming anxiety (88.22%), followed by the female group (83.43%), and the male group (65.38%). This prevalence of overwhelming anxiety in the gender minority, female, and male groups was similar in university students who had self-harmed in the past year with 97.47%, 94.49%, and 87.05%, respectively. Green and Jakupcak (2016) reported that males were less likely to report self-harming due to expected masculine societal norms. Evans, Bira, Gastelum, Weiss, and Vanderford (2018) researched graduate student anxiety. Their study reported that transgender/gender-nonconforming groups and female students are significantly more likely to experience anxiety compared to male graduate students. These studies align with the findings in this research that overwhelming anxiety frequencies differ based on gender in self-harming university student populations with the gender minority group having the highest prevalence rate.

***Gender and anxiety's impact on academic performance.*** Previous studies have reported that transgender/gender-nonconforming groups and female students are significantly more likely to experience anxiety and self-harm compared to male students (Evans, Bira, Gastelum, Weiss, & Vanderford, 2018; Taliaferro & Muehlenkamp, 2015). Surprisingly, the percentage of the gender minority group in this study who identified that anxiety impacted their academic performance only reported a 6% difference between students who had and had not harmed in the past year. However, males and females that self-harmed in the past year had a 10% increase in reporting that anxiety negatively impacted their academic performance compared to males and females who self-harmed over one year ago. This current research proposes that gender minority

students consistently report the highest percentage of academics being negatively affected by anxiety compared to males and females. Borgnana et al. (2018) suggested that gender minority students often report increased discrimination which increases their anxiety compared to male and female groups. Therefore, the influence of self-harm may be minimal in the gender minority group, as gender minority students who have never self-harmed also report higher rates (38.89%) of anxiety impacting academic performance compared to males (15.89%) and females (23.34%) who have never self-harmed.

***Gender and suicidal ideation.*** The rejection of the null hypothesis in both self-harming groups determined that suicidal ideation does vary by gender. Female students in this current study were more likely to report suicidal ideation compared to men. This finding is consistent with previous studies which have identified females having reported higher rates of self-harm (Whitlock et al., 2011) and suicidal ideation compared to men (Aviad-Wilchek et al., 2017; Brownson et al., 2011). Students in the minority gender group reported suicidal ideation more often than male and female respondents. House et al. (2011) further supported the findings of this study, indicating that males and sexual minorities experienced higher rates of suicidal ideation.

Low sample sizes of gender minorities, such as transgender individuals, are frequently reported when evaluating mental health based on gender (House et al., 2011; Su et al., 2016). Su et al. (2016) compared suicidal attempts of 91 transgender participants and 676 non-transgender participants and reported that “41% of transgender respondents reported ever attempting suicide in their life compared with 1.6% among the general population in the United States” (p. 13). The findings of this current research are aligned with previous findings that gender minority students have higher rates of suicidal ideation. Males also reported lower levels of suicidal ideation

compared to gender minorities and female students. Reports of suicidal ideation amongst all three groups were the highest when the student had self-harmed in the past year.

**Sexual orientation.** The following sections discuss the findings of overwhelming anxiety, anxiety's impact on academic performance, and suicidal ideation based on sexual orientation.

***Sexual orientation and overwhelming anxiety.*** Heterosexual students had the lowest frequency of overwhelming anxiety followed by the homosexual group, bisexual group, and sexual orientation minority group. This organization was consistent whether the student had self-harmed in the past twelve months or more than twelve months ago. Borgogna et al. (2018) identified that bisexual individuals experience higher levels of anxiety compared to homosexuals. This current study also found an increased prevalence of bisexuals compared to homosexuals reported experiencing overwhelming anxiety. These differences identified that bisexual and sexual orientation minorities have the highest likelihood for experiencing overwhelming anxiety, followed by homosexual students and heterosexual students.

***Sexual orientation and anxiety's impact on academic performance.*** Sexual orientation and anxiety's impact on academic performance are associated based on university student's history of self-harm. Bisexuals had the highest reports of all sexual orientations that had self-harmed in the past year; whereas the sexual orientation minority group reported the highest percentage of anxiety negatively impacting academic performance amongst student groups who had not self-harmed in the past year. Sexual orientation minority groups were found with the highest rates of anxiety negatively impacting academic performance and heterosexual students presenting with the lowest rates, which is consistent across the literature (Borgogna et al., 2018; Meyer, 2003; Oswalt & Wyatt, 2011).



The increased rates of anxiety that impacts academic performance in sexual minority students may be due to a perceived lack of belonging in academic environments. Rankin et al. (2010) summarized that sexual orientation minority students “were significantly less likely than their allies to feel very comfortable or comfortable with the overall campus climate, their department/work unit climate, and classroom climate than their heterosexual counterparts” (p. 12). Similar to gender minorities, a lack of belonging can increase anxiety and produced negative repercussions for academic performance. It is therefore vital to create a campus community of acceptance and safety for sexual minority students in an attempt to decrease anxiety that impacts academic performance.

***Sexual orientation and suicidal ideation.*** University students in the bisexual, homosexual, and sexual minority groups demonstrated similar reports of suicidal ideation. Heterosexual students reported the lowest percentage of suicidal ideation whether they had harmed in the past year or longer. Around a quarter of bisexual, homosexual, and the gender minority group who had self-harmed over one year ago reported suicidal ideation; this increased to roughly 65% reporting suicidal ideation in these three groups who self-harmed in the past year. In a study by Muehlenkamp et al. (2015) 42.9% of sexual minority participants reported self-harm and suicidal ideation over their lifetime. Their findings presented fall between the reported percentages of the two self-harming groups for the sexual minorities in this study. Little variation existed between bisexual, homosexual, and the sexual minority groups in their reported suicidal ideation. A distinction in reported suicidal ideation exists between these three groups and the heterosexual group. University students with a history of self-harm report higher rates of suicidal ideation than students without a history of self-harm. The rates of suicidal ideation in

students with a history of self-harm are highest in the bisexual, homosexual, and sexual minority groups.

**Race/ethnicity.** Although students who identified as White were the majority within this study (63.5%), this percentage is lower than previous research studies. Davis, Weiss, Tull, and Gratz (2017) identified that self-harm research is “limited by the use of predominantly European-American samples, interfering with efforts to understand the rates and correlates of DSH [deliberate self-harm] among individuals of diverse ethnic backgrounds” (p. 351). Two minority groups had a higher representation in this research compared to similar studies (Glenn & Klonsky, 2013; Schatten et al., 2015); although the representation of Black or African American students (4.8%) in this research was lower than previous studies (Schatten et al., 2015; Wyatt & Oswalt, 2013) but higher than others (Hoff & Muehlenkamp, 2009; House et al., 2011). The Hispanic or Latino/a group represented 17.4% of responses and the Asian or Pacific Islanders group accounted for 14.2% of responses. The remaining race/ethnicities were combined into a race/ethnicity minority group which represented 4.9% of responses. The following sections discuss the findings of overwhelming anxiety, anxiety’s impact on academic performance, and suicidal ideation based on race/ethnicity.

***Race/ethnicity and overwhelming anxiety.*** Asian or Pacific Islander respondents had the lowest frequency of reported anxiety whether they had self-harmed in the past year or over a year ago, followed by the Hispanic or Latino/a group. The Asian Americans group reported the lowest self-harming behaviors according to Whitlock et al. (2006). White students who had self-harmed in the past year had the highest report of overwhelming anxiety; however, the race/ethnicity minority group reported the highest overwhelming anxiety in the group that had not self-harmed in the past year. The race/ethnicity findings are contrasted to research findings that non-White

students experience higher rates of anxiety and self-harm (Kuentzel et al., 2012; Mokrue & Acri, 2015). This current study introduces the finding that Asian or Pacific Islanders and Hispanic or Latino/a groups are less likely to experience overwhelming anxiety based on self-harming history compared to White and the sexual minority groups.

***Race/ethnicity and anxiety's impact on academic performance.*** White students reported anxiety impacted their academic performance in a higher percentage compared to the Hispanic or Latino/a group and Asian or Pacific Islander group. This finding was unanticipated as most studies identify White or Caucasian students to exhibit lower anxiety (Bisson, 2017); however, the reported rates of anxiety appear to differ in relation to anxiety's impact on academic performance based on the findings of this study. The lack of association between anxiety and academic achievement was reported in study by Andrews and Wilding (2016); Bisson (2017) also proposed that anxiety may function as a motivator to improve academic performance. The race/ethnicity minority group reported the largest rates of anxiety impacting academic performance in both self-harming groups and Asian or Pacific Islander group reported the lowest rates of anxiety impacting academic performance. This finding is consistent with research on anxiety in minority groups. The findings related to academic performance impacted by anxiety introduces new information that White students are at risk of anxiety impacting their academic performance. Additionally, minority groups, not including Hispanic or Latino/a and Asian or Pacific Islanders, are least represented on campus and group specific resources should be considered for this population (Walton & Cohen, 2007).

***Race/ethnicity and suicidal ideation.*** Race/ethnicity findings of this study revealed a small level of association by race/ethnic group; however, all race/ethnicity groups that self-harmed in the past year were almost three times more likely to report suicidal ideation compared

to the race/ethnicity groups that had not self-harmed in the past year. Previous research has also yielded low level effects for suicidal ideation and race/ethnicity (Cheref, Lane, Polanco-Roman, Gadol, & Miranda, 2015; Whitlock et al., 2013), while other research identified larger effects of suicidal ideation based on race/ethnicity (Garcia, Skay, Sieving, Naughton, & Bearinger, 2008). The results of a low effect size suggest only minor differences are expected between the groups. The White student group that self-harmed in the past year had the lowest percentage of reported suicidal ideation (57.13%) compared to the highest percentage found in the combined race/ethnicity minority group (64.26%). A study by De Luca, Yan, Lytle, and Brownson (2014) also reported minimal race/ethnicity suicidal ideation group differences which they discussed could be due to more resilience in race/ethnic minorities that attend university. The report of suicidal ideation appears to have minimal differences based on race/ethnicity in students with any history of self-harm.

### **Implications**

Mental health awareness on university campuses has been steadily increasing; however, the taboo of self-harm is often neglected in these studies, specifically in graduate student populations. I do believe the results could be useful in assessing or restructuring current mental health outreach policy. This study's findings have elicited several implications that could be applied to educators and administrators, policy makers, and mental health professionals in academic and non-academic environments. Non-academic environments can include mental health specialists in private practices which are not university affiliate, but who frequently work with university students.

**Implications for academic faculty and administrators.** Academic faculty usually have the greatest contact time with students. This places faculty in a potential gatekeeper role to connect students with appropriate campus mental health resources. During my fourth year of teaching higher education I was contacted by a student after class, asking me to speak with a fellow classmate who had mentioned having suicidal thoughts. I was fortunate to have collaborated with campus mental health services over the past year. In the end, the student received the help they needed. By virtue of the fact that most faculty have never received any training associated with mental health issues, it wouldn't be surprising to hear these types of responses: "I am glad it was you and not me," "Is this really any of our business?" and "I don't know how I would have handled that." Farrer, Gulliver, Bennett, and Griffiths (2015) identified that students have reported a desire to have academic faculty increase their mental health awareness of their students and to understand how to respond appropriately. In 2015, the University of North Dakota created an online 8-hour course that is mandated for elementary, junior high, and high school educators to complete ("University of North Dakota offers online training in mental health for educators", 2016). This type of training, or training by campus mental health services for higher education faculty and administrators, could prove to be beneficial. This training would result in further understanding of available campus resources and how to respond if a student reaches out to them for help.

**Implications for campus mental health services.** Mental health services on campus are mainly geared toward undergraduate students (Waight & Giordano, 2018). By primarily focusing on incoming undergraduate students, the mental health needs of graduate students may be neglected. The lack of focus on graduate students is further exacerbated by the reluctance of graduate students to seek out mental health assistance on campus. Di Pierro (2017) identified that

educators “must remain mindful of the formidable existential challenges that confront graduate students-challenges that may eclipse the academic initiative if advisors are not careful” (p. 27). The findings in this study support the need to establish additional or specialized mental health outreach for graduate students, based on their unique circumstances compared to the undergraduate population.

Di Pierro (2017) further suggested five approaches for mental health services to provide outreach to graduate students; however, these five approaches have the potential to be beneficial for all university students. The five approaches include: (a) begin a conversation on college campuses with senior leadership to design a plan using data tools to create a custom intervention design based on student population needs, (b) provide a contact list where student mental health emergencies can be addressed for faculty, staff, and administration, (c) provide faculty training for awareness of different university group pressures, (d) create opportunities for students to engage in group discussions and professional development to foster shared experiences, (e) keep the mental health conversations alive to reduce lapsing into inactivity. One way to increase access for mental health services among university students could include online mental health services. In their study of community colleges, Dunbar, Sontag-Padilla, Kase, Seelam, and Stein (2018) reported that university students were open to online mental health services; however, few of the participants had used online mental health services. Providing online services could provide a way to reach students that self-harm by reducing the stigma of face-to-face therapist meetings. Another benefit to online mental health service programs is the ability for students to be immediately connected with resources when they need it. Often, on-campus mental health services have a limited number of visits or long gaps of time between available appointments due

to high demand for their services (Lipson et al., 2016; Ratanasiripong et al., 2012). Online programs could help to alleviate some of the challenges of face-to-face appointments.

Collaboration on campus may assist with increasing campus mental health access and outreach. Collaboration between students, faculty, administration, and campus mental health service professionals is paramount. Whether this involves establishing increased mental health outreach services or alternative mental health assistance access is a decision to be made on an individual university level. A strong and united front will aid in combating threats to personal wellbeing and facilitate an environment where students can thrive in their academic and personal lives.

**Implications for university students.** One area often overlooked when discussing mental health on campus includes how peers, similar to faculty members, can serve as gatekeepers. Research has also found that individuals who self-harm are more likely to seek help from a friend as opposed to parents or mental health professionals (Hasking, Rees, Martin, & Quigley, 2015). Online sexual harassment training for students is a requirement in many universities. A similar training for understanding mental health issues and what campus resources are available could be invaluable. Training students to access mental health services, rather than just know service exist, can provide them with a resource if a peer is struggling with anxiety, suicidal ideation, or self-harm. If the student is personally struggling with a mental health issue, they would know how to seek help. The final advantage of increased mental health access training for university students fulfils Di Pierro's (2017) advice to keep the mental health conversations alive on campus.

### **Study Strengths and Weaknesses**

The first weakness was the wide variation across cell sample sizes. The largest groups included students without a history of self-harm, undergraduates, heterosexuals, women, men, and White race/ethnicity. Smaller sample groups such as transwomen, transmen, biracial and multiracial race/ethnicity were underrepresented in this study. While the groups utilized in this research provide insight into the minority groups of gender, sexual orientation, and race/ethnicity, it does not provide a complete portrait of every minority group. Several categories were combined to increase sample sizes.

Survey fatigue and decreased attention span are the second weakness in this study. The mental health section of the ACHA NCHA II is located at the end of the survey. Due to the extensive number of items, it is possible the subjects may experience cognitive fatigue (Ackerman & Kanfer, 2009). Other studies have identified that the experience of fatigue in testing is not detrimental to the test performance; however, increased self-reported levels of cognitive fatigue resulted in reduction of effort during the session (Boksem & Tops, 2008; Möckel, Beste, & Wascher, 2015). Due to the mixed findings, it would behoove future research to consider creating only questions similar to those mental health questions found in the ACHA NCHA II. This concentration and shortening of questions would greatly reduce the risk of survey fatigue.

The third weakness in this study was the small graduate student population. Originally, this research was exclusively focused on graduate students. However, covariate group population counts were low, especially in the gender, sexual orientation, and race/ethnicity minority groups. The inclusion of undergraduate data increased the minority group sizes which provided a more thorough analysis of mental health issues in these groups.



The fourth weakness in this study is the classification of graduate students into one group. Undergraduates are identified as first, second, third, fourth, and fifth year or higher in their education; whereas graduate students have only one option. The levels of anxiety in graduate students who are in the final year of their master or doctoral level programs may experience increased levels of stress compared to graduates in their first year of graduate education (Mousavi et al., 2018).

The final weakness was the lack of severity assessment in self-harm, overwhelming anxiety, and suicidal ideation. For example, participants who self-harmed more severely (more extensive tissue damage) in the SH12- group may still experience higher levels of mental health issues than students in the SH12+ group who have self-harmed with minimal damage. Assessing this severity would provide another window into the long-term mental health impact of self-harming student populations. The anxiety's impact on academic performance did however provide a severity assessment based on the level which academic performance was affected.

Although several weaknesses existed in this study, a similar number of strengths also existed. The first strength of this study was the large sample size. This study had 88,178 respondents which facilitated increased sample sizes, even among minority students. This large sample size resulted in more information surrounding different student groups and also increased the confidence of reported findings. The second strength was the distribution of minority students. Minority groups including gender, sexual orientation, and race/ethnicity in this study are similar to national university distributions. This similarity increased the generalizability of findings in this research. The third strength of this study was the variety of universities that participated in the survey. Universities that participated in this study ranged from small universities with less than 2,500 students to universities with more than 20,000 students.

Additionally, universities were located in all four regions of the United States and public and private universities were also included. This range of university classifications assisted in the generalizability of this study. The final strength of this study was the use of the data from the ACHA NCHA II survey which is a valid and reliable survey for assessing mental health issues in university students.

### **Future Studies**

The first suggestion for future research is to focus on minority samples. Minority groups had the smallest representation in the ACHA NCHA II. Looking at specific groups, for example Native American or pansexual students, would establish an individualized portrait for their mental health issues; as opposed to combined groups from small cell sample sizes to have a closer distribution when compared to larger populations such as heterosexual student groups.

The second suggestion for future research is to evaluate graduate students based on year and type of academic program. Graduate student profiles can include enrollment in post-graduate certificate, masters, and doctoral level programs. As discussed in the limitations section, graduate students beginning their degree may experience self-harm, overwhelming anxiety, anxiety's impact on academic performance, and suicidal ideation differently than students preparing to graduate and enter the work force. Furthermore, graduate students completing their Doctor of Medicine, for example, may experience anxiety quite differently than graduate students completing a Juris Doctor degree. This is not to say that one degree is more difficult or prestigious than the other; however, mental health differences may be observed in different graduate programs and should be assessed.

The final suggestion for future studies is to evaluate if another mental health issue, such as anxiety or suicidality, occurred leading up to the self-harm. The response periods provided in the ACHA NCHA II do not allow the researcher to assess which, if any, mental health issues the self-harming behavior is used to manage. For example, the respondents could be asked if they self-harmed because they performed poorly on an exam or if they were feeling overwhelmingly anxious. Future studies could expand on intentional self-harm by asking if the individual was anxious, stressed, suicidal, or have an open response option to explain their feelings that occurred before or during their self-harming episode.

### **Concluding Remarks**

My motivation for studying these mental health associations arose from counselling young adults who self-harmed and the recurrent discussions of self-harm that emerged while teaching graduate psychology courses. While limitations did exist in this study, evidence has also been established that the mental health variables in this current study are not independent issues that occur randomly in subpopulations. This study has attempted to highlight intrinsic connections and disparities in the subpopulations.

I found it interesting that a significant association between graduate status and anxiety impacting academic performance was observed for students in the SH12+ group. The SH12+ groups for overwhelming anxiety and suicidal ideation was the only non-significant finding in this research. This identified that no association existed. This suggests that differences between undergraduate and graduate self-harming student needs are similar in this domain; however, differences do exist based on anxiety surrounding academic performance. Furthermore, the differences that exist for overwhelming anxiety, anxiety's impact on academics, and suicidal ideation when accounting for gender, sexuality, and race/ethnicity can be a daunting task to

accommodate in universities. Higher education environments must continue to improve and expand mental health assistance for our students. This can only be accomplished when we continue the conversations surrounding mental health and addressing the unique concerns of each group.

I believe that addressing these group differences in mental health will increase our awareness and effectiveness of addressing and treating self-harm, anxiety, and suicidal ideation in university students. By doing so, this will result in a brighter future for our students, campuses, and communities as the students graduate and enter the workforce or continue in their academic studies. These mental health issues will not spontaneously evaporate from the academic environment. However, by recognizing students who are at risk and may be hindered by their mental health we can begin and continue to foster an academic community of support, trust, and compassion. Only then can students, educators, and administrators together begin to appreciate and mitigate the effects of mental health on university campuses.

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*Appendix A*

## ACHA Data Use Request Form

**Data Use Request Form**

Date submitted: 01 / 28 / 2019 As soon as possible  
Date needed\*:      /      /       
*\*Must allow at least 4-6 weeks for processing*

**ACHA-NCHA data is only available to Individual (Regular or Student) ACHA members.**

- The PI (Principal Investigator) must be an ACHA individual member to obtain ACHA-NCHA data, and is expected to be the lead author on any publications or presentations connected to this request.
- If the request is for a dissertation/thesis, the student should be listed as the PI and have an ACHA membership.
- Membership is not required if you are an ACHA-NCHA participating school making a request to compare your local data to the reference group data.
- It is advised that you submit your data use request for approval prior to or in conjunction with your membership application. Approval of a data use request is not guaranteed and a membership refund is not authorized if your request is denied.
- For more information and to apply for an ACHA membership, please visit [https://www.acha.org/ACHA/Membership/Become\\_Member/ACHA/Membership/Becoming\\_a\\_Member.aspx](https://www.acha.org/ACHA/Membership/Become_Member/ACHA/Membership/Becoming_a_Member.aspx)

**Section 1. Requestor (Principal Investigator) Information:**Name/Degree: Meagan Leigh Clark / Doctorate in Educational Leadership

Title: \_\_\_\_\_

Institution: George Fox UniversityMailing Address: 1302 County Road 156City: Cisco State: TX Zip: 76437Phone: (503) 954-7900 Fax: N/AE-mail Address: [clark.meaganleigh@gmail.com](mailto:clark.meaganleigh@gmail.com) / [mclark14@georgefox.edu](mailto:mclark14@georgefox.edu)ACHA Membership: Individual Member # 93599**Section 2. Co-Principal Investigator(s) Information:**

Name/Degree: \_\_\_\_\_

Title: \_\_\_\_\_

Institution: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

ACHA Membership: Individual \_\_\_\_ Institutional \_\_\_\_ Non-Member \_\_\_\_ Unsure \_\_\_\_



**Section 3. Other individual(s) who will be assisting in this research:**  
**(please append additional sheets if necessary)**

Name: Dane Joseph, PhD

Title: Assistant Professor of Education

Organization: George Fox University

Name: Terry Huffman, PhD

Title: Professor of Education

Organization: George Fox University

Name: Karen Buchanan, EdD

Title: Professor of Education

Organization: George Fox University

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

**Section 4. Research Project Information**

Project title: Working Title: Associated Mental Health Issues in Graduate Student Populations  
That Self-Harm

**Project purpose:**

Self-harm is a campus mental health concern, as well as a public health concern. This research aims to provide data to support increasing mental health outreach and programs for graduate students, as well as filling in the gap in graduate mental health research. Furthermore, the ability to implement more self-care programs and mental health awareness on campus can be the first step for graduate students to seek help. By instituting plans on campus, students may experience less hesitation in reaching out to discuss their mental health concerns and seek professional treatment, if warranted. Intervention initiated at the graduate education level will have a positive long-term impact as students prepare for their next life event, such as graduation and beginning a new job.

**Hypotheses to be tested (if applicable):**

1. Do SH+ graduate students experience more overwhelming anxiety than SH- graduate students?
  - 1a. Does overwhelming anxiety in SH+ graduate students vary by gender?
  - 1b. Does overwhelming anxiety in SH+ graduate students vary by sexuality?
  - 1c. Does overwhelming anxiety in SH+ graduate vary based on race/ethnicity?
2. How does anxiety impact academic performance in SH+ graduate students compared to SH- graduate students?
  - 2a. Does anxiety surrounding academic performance vary between SH+ graduate students based on gender?
  - 2b. Does anxiety surrounding academic performance vary between SH+ graduate students based on sexual orientation?
  - 2c. Does anxiety surrounding academic performance vary between SH+ graduate students based on race/ethnicity?
3. Do SH+ graduate students experience increased suicidal ideation compared to SH- graduate students?
  - 3a. Does suicidal ideation differ between SH+ graduate students based on gender?
  - 3b. Does suicidal ideation differ between SH+ graduate students based on sexuality?
  - 3c. Does suicidal ideation differ between SH+ graduate students based on race/ethnicity?

\*SH+ = Students with a history of self harm / SH- = Students without a history of self harm

**Section 5 (continued). Data Requested and Proposed Analyses****ACHA-NCHA II-C survey time period(s) requested:**

Survey period (study number)	Sample size		Survey period (study number)	Sample size	
	Schools	Students		Schools	Students
Spring 2015 (see previous page)			____ Fall 2015 (32)	40	19,861
____ Spring 2016 (33)	137	95,761	____ Fall 2016 (34)	51	33,512
____ Spring 2017 (35)	92	63,497	____ Fall 2017 (36)	52	31,463
<b>x</b> Spring 2018 (37)	140	88,178			

**Survey item(s) requested (Q1-Q65). Check all that apply.\***

A copy of the survey can be found at: [https://www.acha.org/documents/ncha/ACHA-NCHA\\_IIc\\_Web\\_Survey\\_2011\\_SAMPLE.pdf](https://www.acha.org/documents/ncha/ACHA-NCHA_IIc_Web_Survey_2011_SAMPLE.pdf)

NQ1	____	NQ18	____	NQ35	<b>x</b>	NQ51	<b>x</b>
NQ2	<b>x</b>	NQ19	____	NQ36	<b>x</b>	NQ52	____
NQ3	<b>x</b>	NQ20**	____	NQ37	____	NQ53	____
NQ4	____	NQ21	____	NQ38	____	NQ54	<b>x</b>
NQ5	____	NQ22	____	NQ39	____	NQ55	____
NQ6	____	NQ23	____	NQ40	____	NQ56	<b>x</b>
NQ7	____	NQ24	____	NQ41	____	NQ57	<b>x</b>
NQ8	____	NQ25	____	NQ42	____	NQ58	____
NQ9	____	NQ26	____	NQ43	____	NQ59	____
NQ10	____	NQ27	____	NQ44	____	NQ60	____
NQ11	____	NQ28	____	NQ45	<b>x</b>	NQ61	____
NQ12	____	NQ29	____	NQ46	<b>x</b>	NQ62	____
NQ13	____	NQ30	<b>x</b>	RNQ47**	<b>x</b>	NQ63	____
NQ14	____	NQ31	<b>x</b>	RNQ48**	<b>x</b>	NQ64	____
NQ15	____	NQ32	____	NQ49	____	NQ65	____
NQ16	____	NQ33	<b>x</b>	NQ50	____	NQ66	____
NQ17	____	NQ34	____				

\*Complete datasets will not be provided

\*\*These items were changed or added to this version of the ACHA-NCHA II and should not be compared with previous versions of the same questions.

**Analyses Plans:**

For analyzing this data, I will be using a chi-square test for association to discern if any

associations of anxiety and suicidal ideation exist between demographics (sexual orientation, gender, and race/ethnicity) in graduate student populations with a history of self-harm.

**Section 6. Intended Dissemination of Results**

How will the results of this research be used/disseminated? (check all that apply)

- ☐ Journal Article(s)  
*List journal(s)* \_\_\_\_\_
- ☐ Book Chapter(s)  
*List book(s)* \_\_\_\_\_
- ☐ Professional organization presentation(s)  
*List organization(s)* \_\_\_\_\_
- ☒ Thesis/Dissertation  
*Name of primary advisor* Dane Joseph, PhD
- ☐ Fact Sheet/Brochure
- ☐ Policy Development
- ☐ Educational Programming Development/Implementation
- ☐ Comparison to individual institution's results
- ☐ Other  
*Please List* \_\_\_\_\_

**Section 7. Data Use Guidelines**

The ACHA-NCHA data contain information about high-risk behaviors, and all data are confidential. ACHA will not release data on any institution, nor will it release data sets where it is possible to identify any participating schools. Individuals who are granted access to any ACHA-NCHA data must adhere to ACHA's data use guidelines, which are provided in Section 8. Failure to sign or to adhere to the attached agreement will result in immediate termination of data use privileges.

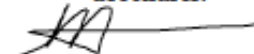
The accuracy of the users' statistical analyses and the findings they report are not the responsibility of the American College Health Association. ACHA shall not be held liable for improper or incorrect use of the data.

### Section 8. Data Use Agreement

*Signing this agreement does not guarantee your request will be approved; however, this section must be complete for your application to be considered.*

By signing below, I agree to the following:

- I acknowledge that the ACHA-NCHA data is the exclusive property of ACHA. The data is confidential and proprietary, and I will take all reasonable precautions to prevent unauthorized disclosure or access, including through necessary communications with, and oversight of, the persons named herein. I will use the data solely for the purposes stated, and I shall not transfer the data to, or share the data with, any person not identified in this Request Form. Upon completion of my use of the data, or at any time if so directed by ACHA, I shall return the data to ACHA, without retaining a copy, and shall purge such data from any print or electronic records.
- I acknowledge, as the person making the data request, that I am the PI for the project listed above, and expect to be the lead author on any publications or presentations resulting from this request.
- I will reference the American College Health Association when reporting any data obtained from the ACHA-NCHA utilizing the following standard format (items in Arial font are specific to the data you receive and must be completed appropriately):  
American College Health Association. American College Health Association-National College Health Assessment, **Survey Period(s)** [computer file]. Hanover, MD: American College Health Association [producer and distributor]; **(YYYY-MM-DD of distribution)**.
- I will include the following disclaimer language in any published article or presentation:  
*The opinions, findings, and conclusions presented/reported in this article/presentation are those of the author(s), and are in no way meant to represent the corporate opinions, views, or policies of the American College Health Association (ACHA). ACHA does not warrant nor assume any liability or responsibility for the accuracy, completeness, or usefulness of any information presented in this article/presentation.*
- I will grant access to ACHA-NCHA data to only those individuals specified in this *Data Use Request Form*. Should the need to grant access to additional individuals arise, I will contact the ACHA Research Director immediately.
- If my institution requires, I will obtain all necessary Institutional Review Board (IRB) approval for secondary data analysis prior to beginning my research, and I will provide ACHA with appropriate documentation of IRB approval.
- I will provide ACHA with any final products produced using ACHA-NCHA data, which include but are not limited to: professional journal manuscripts, professional conference presentations, student theses/dissertations, book chapters, policy documents, fact sheets, and brochures.



Signature of Principal Investigator

1/28/2019

Date

Signature of Co-Principal Investigator(s)

Date

**When all sections are complete, please email or fax this form to:**

Mary Hoban, PhD, CHES

[mhoban@acha.org](mailto:mhoban@acha.org)

410.859.1510 (fax)

*For Official Use Only*

Approved \_\_\_\_\_

Not Approved \_\_\_\_\_

Date \_\_\_\_\_



*Appendix B*

## George Fox University IRB Proposal

## GEORGE FOX UNIVERSITY HSRC INITIAL REVIEW QUESTIONNAIRE

Page 1

**\*\*NOTE:** Review carefully the full text of the Human Subjects Research Committee Policies and Procedures.

Date submitted: 1/30/2019

Date received: \_\_\_\_\_

GEORGE FOX UNIVERSITY  
Human Subjects Research Committee

PROTECTION OF HUMAN SUBJECTS INITIAL REVIEW QUESTIONNAIRE

**[Note:** Dissertation, or other formal research proposal, need not be submitted with this form. However, relevant section(s) may need to be attached in some cases, in addition to filling out this form completely, but only when it is not possible to answer these questions adequately in this format. Do not submit a proposal in lieu of filling out this form.]

Title of Proposed Research: Exploring the Associations Among Self-harm, Suicidal Ideation, and Academic Anxiety in the American College Health Association National College Health Assessment II  
Principal Researcher(s): Meagan Clark  
Degree Program: Ed.D. Program  
Rank/Academic Standing: Student  
Other Responsible Parties (if a student, include faculty sponsor; list other involved parties and their role)  
Dane Joseph, PhD - Supervisor  
Terry Huffman, PhD - Dissertation Committee  
Karen Buchanan, PhD - Dissertation Committee

**(\*\*Please include identifying information on page 6 also.)**

(1) Characteristics of Subjects (including age range, status, how obtained, etc)

Graduate students whom have completed the American College Health Association's National College Health Assessment II (ACHA-NCHA II). The median age of the graduate student population is 26.00 years of age and ages range from 18 to 89 years of age in Spring of 2018 ACHA NCHA II. The researcher is a member of the ACHA and submitted a Data Use Request Form. The request has been approved for use by the ACHA committee.

(2) Describe Any Risks to the Subjects (physical, psychological, social, economic, or discomfort/inconvenience):

The risks to subjects are minimal due to secondary data analysis. The ACHA-NCHA II did ask psychologically sensitive questions; however, subjects were informed they were not required to complete the assessment.

## GEORGE FOX UNIVERSITY HSRC INITIAL REVIEW QUESTIONNAIRE

Page 2

(3) Are the risks to subjects minimized (i) by using procedures which are consistent with sound research design and which do not unnecessarily expose subjects to risk, and (ii) whenever appropriate, by using procedures already being performed on the subjects for diagnostic or treatment purposes? ☒ Yes/☐ No

Degree of risk: 1 (low)

(4) Briefly describe the objectives, methods and procedures used:

Objective: The focus of this secondary data research is to explore anxiety and suicidal ideation in graduate student populations that have reported a history of self-harm. Respondents that self-report self-harming will be identified as SH+ in the research questions, and respondents that have never engaged in self-harm are identified as SH-.

Methods: This study will explore data collected by the American College Health Association's National College Health Assessment II (ACHA-NCHA II), which is administered to universities throughout the United States. The researcher will conduct a secondary data analysis of the descriptive statistics reported in the 2018 Spring ACHA-NCHA II.

The following research questions will be answered:

1. Do SH+ graduate students experience more overwhelming anxiety than SH- graduate students?
  - 1a. Does overwhelming anxiety in SH+ graduate students vary by gender?
  - 1b. Does overwhelming anxiety in SH+ graduate students vary by sexuality?
  - 1c. Does overwhelming anxiety in SH+ graduate vary based on race/ethnicity?
2. How does anxiety impact academic performance in SH+ graduate students that have compared to SH- graduate students?
  - 2a. Does anxiety surrounding academic performance vary between SH+ graduate students based on gender?
  - 2b. Does anxiety surrounding academic performance vary between SH+ graduate students based on sexual orientation?
  - 2c. Does anxiety surrounding academic performance vary between SH+ graduate students based on race/ethnicity?
3. Do SH+ graduate students experience increased suicidal ideation compared to SH- graduate students?
  - 3a. Does suicidal ideation differ between SH+ graduate students based on gender?
  - 3b. Does suicidal ideation differ between SH+ graduate students based on sexuality?
  - 3c. Does suicidal ideation differ between SH+ graduate students based on race/ethnicity?

Procedure: These questions will be explored using Pearson's chi-square test for association.

## GEORGE FOX UNIVERSITY HSRC INITIAL REVIEW QUESTIONNAIRE

Page 4

(7) Briefly describe the benefits that may be reasonably expected from the proposed study, both to the subject and to the advancement of scientific knowledge – are the risks to subjects reasonable in relation to anticipated benefits?

Self-harm is a campus mental health concern, as well as a public health concern. With a primary focus on graduate student mental health, this research is vital to promote campus outreach, student mental health funding, and to increase awareness of mental health trends in demographic groups (sexual orientation, gender, and race/ethnicity). Furthermore, the ability to implement more self-care programs and mental health awareness on campus can be the first step for graduate students to seek help. By instituting plans on campus, students may experience less hesitation in reaching out to discuss their mental health concerns and seek professional treatment, if warranted. Intervention initiated at the graduate education level will have a positive long-term impact as students prepare for their next life event, such as graduation and beginning a new job. These associations have been evaluated in adolescent and undergraduate populations, graduate students experience different challenges and require specialized focus. Research has identified a lack of mental health support leads to lower academic performance which can decrease attrition rates for universities and jeopardize the students job prospects.

(8) Where some or all of the subjects are likely to be vulnerable to coercion or undue influence (such as children, persons with acute or severe physical or mental illness, or persons who are economically or educationally disadvantaged), what appropriate additional safeguards are included in the study to protect the rights and welfare of these individuals?

Participation was voluntary and participants were informed of any risks by the American College Health Association prior to beginning the survey. At the beginning of the survey the ACHA informs participants that "This survey is completely voluntary. You may choose not to participate or not to answer any specific question. You may skip any question you are not comfortable in measuring."

(9) Does the research place participants "at risk?" ☐ Yes/☒ No If so, describe the procedures employed for obtaining informed consent (*in every case, attach copy of informed consent form; if none, explain*).



## GEORGE FOX UNIVERSITY HSRC INITIAL REVIEW QUESTIONNAIRE

Page 3

(5) Briefly describe any instruments used in the study (attach a copy of each).

The preliminary data was obtained using the American College Health Association's National College Health Assessment II Survey. I have attached a copy and codebook of the web survey that was administered. My research involves analysis of the following questions: NQ30G (overwhelming anxiety), NQ30I (self-harm), NQ30J (suicidal thoughts), NQ45A3 (academic anxiety), RNQ47C (gender identity), RNQ48 (sexual orientation), NQ51 (year in school), and NQ54 (race/ethnicity).

(6) How does the research plan make adequate provision for monitoring the data collected so as to insure the safety, privacy and confidentiality of subjects?

To adhere to university policy and procedures and to protect the anonymity of the participants, names and additional information have been removed. The data has already been collected by the American College Health Association (ACHA), and before accessing the data, the researcher will submit an IRB form to the review committee to ensure participant's continued anonymity. Removal of participant names will assist in retaining anonymity; this is vital as the number of participants that engage in self-harm may exhibit anxiety around public knowledge of their responses. Furthermore, the survey distributed by the ACHA included a large variety of mental, physical, and sexual health item responses that could affect individual privacy and confidentiality. The Data Protection Act of 1998, the ACHA is required to specifically ask participants if they would be amenable to archival of their response data and made available for future research. .

*Appendix C*

## George Fox University IRB Approval Letter

2182011

## GEORGE FOX UNIVERSITY HSRC INITIAL REVIEW QUESTIONNAIRE

Page 6

Title: Exploring the Associations Among Self-harm, Suicidal Ideation, and Academic Anxiety in the American College Health Association National College Health Assessment II

Principal Researcher(s): Meagan Clark

Date application completed: 1/30/19

**(The researcher needs to complete the above information on this page)**

**COMMITTEE FINDING:**

For Committee Use Only
------------------------

☒ (1) The proposed research makes adequate provision for safeguarding the health and dignity of the subjects and is therefore approved.

☐ (2) Due to the assessment of risk being questionable or being subject to change, the research must be periodically reviewed by the **HSRC** on a \_\_\_\_\_ basis throughout the course of the research or until otherwise notified. This requires resubmission of this form, with updated information, for each periodic review.

☐ (3) The proposed research evidences some unnecessary risk to participants and therefore must be revised to remedy the following specific area(s) on non-compliance:

☐ (4) The proposed research contains serious and potentially damaging risks to subjects and is therefore not approved.



Chair or designated member

2/1/19

Date

*Appendix D*

## ACHA Data Use Request Approval Letter



March 14, 2019

Meagan Leigh Clark  
George Fox University  
1302 County Road 156  
Cisco, TX 76437

Dear Meagan,

Thank you for submitting a request to use ACHA-NCHA data in your project, “Associated Mental Health Issues in Graduate Student Populations that Self-Harm.” Your request has been approved and enclosed you will find the ACHA-NCHA Reference Group Dataset you requested and the corresponding survey codebook. Both institutional and student identifiers have been removed from the file.

I have enclosed a copy of our data use guidelines and agreement for your information. Your signed copy is on file in my office. Please note that additional studies using the ACHA-NCHA data acquired through this request require submission of a new data use request to the ACHA-NCHA Program Office.

As stated in the agreement, we would appreciate a copy of any final products that result from your research. We also ask that you add the following disclaimer to any article or presentation you make using the ACHA-NCHA data:

*The opinions, findings, and conclusions presented/reported in this article/presentation are those of the author(s), and are in no way meant to represent the corporate opinions, views, or policies of the American College Health Association (ACHA). ACHA does not warrant nor assume any liability or responsibility for the accuracy, completeness, or usefulness of any information presented in this article/presentation.*

Please don't hesitate to contact me if you have any questions.  
Best of luck with your research,

Mary Hoban, PhD, MCHES  
Director, ACHA-NCHA Program Office

Enclosure: ACHA-NCHA Data Use Guidelines and Agreement