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Comparing Depression and Anxiety among Athletes and Nonathletes in a College Counseling Center Population.

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Comparing Depression and Anxiety among Athletes and Nonathletes in a College Counseling
Center Population.

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Dissertation submitted to the
College of Education and Human Services
at West Virginia University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in
Counseling Psychology

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Morgantown, West Virginia
2021

Keywords: student-athlete, mental well-being, athlete identity, anxiety, depression

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ABSTRACT

Comparing Depression and Anxiety among Athletes and Nonathletes in a College Counseling Center Population.

Alexandria Kinder, M.A.

This study focused on self-reported rates of anxiety and depression when first presenting to a college counseling center at a state university in the mid-Atlantic region. The self-reported measures are the Counseling Center Assessment of Psychological Symptoms-62 (CCAPS-62) and Standardized Data Set (SDS), data forms that are supported through the electronic medical record system, Titanium. The data compared clinical populations of non-student-athletes and student-athletes to understand how the additional athlete identity may contribute to mental health. This study employed a between-subjects, quantitative-descriptive, cross-sectional, design to define and describe the nature of the relationships between one continuous dependent (anxiety or depression) variable and the two categorical independent variables (student-athlete vs. non-student-athlete and male vs. female). Differences in endorsed mental health rates of student-athletes by class status (i.e., freshman, sophomore, junior, senior) were also explored. An independent samples *t*-test was used to analyze four hypotheses and a two-way ANOVA was used to analyze two hypotheses. The results showed no statistically significant differences between anxiety and depression in student-athletes and their nonathlete peers. There were statistically significant differences between endorsed levels of anxiety and depression between male and female student-athletes, with female student-athletes endorsing higher rates of mental health concerns. There was no difference between endorsed levels of depression and class status. The results showed that there is a statistically significant difference in endorsed levels of anxiety and class status, with male and female student-athletes reporting higher levels of anxiety than their junior, sophomore, and freshman peers. Results may inform college counseling center staff and athletic department personnel about how to best support the mental health and well-being of collegiate student-athletes.

DEDICATION

This completed dissertation is dedicated to my younger self, who at eight-years-old came home from school and exclaimed “when I grow up, I am going to be a psychologist.” Here you are, 20-years later as Dr. Kinder – you did it, kid!

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CHAPTER 1: INTRODUCTION AND REVIEW OF LITERATURE

Symptoms of anxiety and depression are two of the most common mental health concerns that college student-athletes endorse (Stull, 2014), and within the entire collegiate population anxiety and depression are the only two mental health concerns that have significantly increased in prevalence rates over the last four years (Xiao et al., 2017). Therefore, in this study I focused specifically on endorsed rates of anxiety and depression in collegiate student-athletes. Though there are other mental disorders that are endorsed by student-athletes and the greater college population, given Stull's (2014) findings, I hope to further understand the nature of anxiety and depression in student-athletes. Throughout the literature review the term *mental health* will be used but will specifically refer to anxiety and depression. When describing student-athletes, the term *varsity status* will be used in this research study. This is aligned with the describing variable on the self-report measure that was utilized in this study and distinguishes between an intramural, club and Division I student-athlete. The varsity student-athlete indicator is reflective of student-athletes that participate in the university's Division I athletics, and the sample for this research study.

Estimating Prevalence Rates of Anxiety and Depression in Student-Athletes

Storch et al., (2005) found that "intercollegiate athletes report a need for counseling regarding time management, stress, burnout, fear of failure, anxiety, depression and performance related issues" (p. 88). The rates at which athletes endorse depression, anxiety, or both, remains unclear as research results have been inconsistent and inconclusive. According to Davoren and Hwang (2014), over a twelve-month period, 21% of male student-athletes endorsed feeling depressed and 31% endorsed feeling anxious, and 28% of female student-athletes endorsed feeling depressed and 48% endorsed feeling anxious. In terms of gender differences (i.e., female

vs. male experiences with anxiety and depression), these numbers are consistent with what other researchers have found: that female college student-athletes endorse higher rates of anxiety and depression symptoms than their male peers (Cox et al., 2017; Trojian, 2016; Yang et al., 2007). However, these findings are significantly higher than other reported results.

Cox et al. (2017) found that 33.2% of college student-athletes experienced symptoms of depression, while Yang et.al. (2007) found about 21% of student-athletes struggle with symptoms of depression at some point during their college athletic career. Weigand et al., (2013) suggested that these estimates are too high, and believe them to be significantly lower, with about 17% of student-athletes endorsing difficulties with depressive symptoms. Watson and Kissinger (2007) wrote that 10 - 15% of college student-athletes experience psychological concerns. The estimates of prevalence rates of endorsed depression and anxiety symptoms amongst the college student-athlete population range from as high as 33.2% to as low as 10%, a notable range. There are 460,000 college student-athletes (National Collegiate Athletic Association, 2019) in the United States and the difference between 33.2% and 10% is nearly 106,720 student-athletes who are potentially under-accounted for given the 23% gap in prevalence rates in previous literature. Monetarily speaking, this makes it nearly impossible for athletic departments to adequately budget and allocate funds to address mental health concerns amongst student-athletes. It is imperative to clarify the prevalence of mental health rates amongst college student-athletes so departments can appropriately plan and effectively respond. It is also important to understand how the prevalence rates differ from national non-college adult population averages as well as their nonathlete college peers, which will help provide clarity for athletic departments and beyond, to better assess and address mental health concerns with college student-athletes.

The American College Health Association (2008) reported that specifically for the 18-25-year-old age group, about 8.7% endorsed depressive symptoms in the previous 12-months, which is slightly higher than the 6.7% overall rates of depression endorsed by adults. These numbers are most closely paralleled by Watson and Kissinger (2007), who reported campus-wide averages of mental health concerns are about 8%-9%. These findings are consistent with the national non-college population averages and do not differ greatly from their findings in the college student-athlete population; although student-athlete mental health concerns (10%-15%) are slightly elevated (Watson & Kissinger, 2007). However, this is not the case for other studies that found elevation amongst the college student population when compared to the national non-college adult population averages. Eisenberg et al., (2007) reported that about 15.6% of undergraduate students endorsed struggles with anxiety or depression. Davoren and Hwang (2014) reported levels of depression and anxiety amongst the nonathlete population. They found that 27% of male nonathlete students endorsed feeling depressed and 40% endorsed feeling anxious, while 33% of female nonathlete students endorsed feeling depressed and 56% endorsed feeling anxious. These numbers are representative of college students that do not also identify as athletes and suggest that they report high levels of depression and anxiety when compared to their varsity student-athlete peers. However, other researchers such as Hinkle (1994), Murray, (1997) and Parham (1993) reported that student-athletes experience higher levels of mental health concerns when compared to their nonathlete peers. These differing reports are consistent across multiple research publications that have studied the mental health and wellbeing of college students and student athletes. What remains unclear is if the additional athletic identity (student-athlete) increases prevalence rates of depression and anxiety when compared to their nonathlete peers.

Athletic Identity

The athletic identity literature is rooted in Erikson's (1959) eight stages of psychosocial development, specifically the adolescence stage of identity versus identity confusion. In late adolescence, individuals are tasked with making substantial decisions which requires active exploratory behavior to establish their personal identities (Murphy et al., 1996). Good et al., (1993) defined athletic identity as "the degree to which an individual identifies with the athlete role" (p. 2). Lally and Kerr (2005) suggested that student-athletes do less exploring than their nonathlete peers as they have already committed themselves, sometimes exclusively, to the athlete role. This could lead to possible *identity foreclosure*, defined in Erikson's (1959) theory of psychosocial development as an exclusive commitment to an identity prior to proper exploration of other potential salient identities. Murphy et al., (1996) noted that athletic identity has been shown to be positively associated with identity foreclosure. Athletic identity, and thus identity foreclosure, has been associated with a variety of traits and personality variables including dependent decision-making styles (Murphy et al., 1996), depressed mood following sport injury (Brewer, 1993; Good et al., 1993), greater masculine gender role conflicts combined with lower levels of help-seeking (Heird & Steinfeld, 2013), poor academic performance, and depression and burnout (Chen et al., 2010). College students who also identify as athletes carry an additional identity that sets them apart from a general college population. This creates opportunities for researchers to examine the unique aspects of this college sub-culture; a culture that may create opportunity for mental health concerns to go unseen.

To date, researchers have focused on comparison between student-athlete and nonathlete peers, as well as differences between gender identity and academic class amongst student-athlete participants. In this study, gender identity will be used to stay aligned with the language utilized

on the self-report demographic questionnaire that the participants completed. As noted above, research has consistently shown that female student-athletes endorse higher levels of distress than their male athlete peers (Cox et al., 2017; Davoren & Hwang, 2014; Storch et al., 2005; Trojian, 2016; Yang et al., 2007), and that freshman student-athletes report higher frequencies of depressive symptoms than their senior teammates (Yang et al., 2014). It was also found that depression levels are higher in current college athletes versus previous (retired) student-athletes (Storch et al., 2005; Trojian, 2016). Most of the literature supports the high prevalence of anxiety and depression found in the demographics listed above. However, there is a discrepancy between reported numbers as well as inconsistency in the conclusion of whether student-athletes experience levels of depression and anxiety at higher, lower, or similar rates as their nonathlete peers. In fact, two publications, both sponsored by the National Collegiate Athletic Association (NCAA), reported different findings regarding the prevalence rate of mental health concerns in student-athletes and nonathletes. The NCAA represents over 1000 universities and 100 athletic conferences to support the health, wellbeing, and academic success of college student-athletes. Keeping with this mission prompted the NCAA to further evaluate the mental health and wellbeing of collegiate student-athletes. The Sport Science Institute (2015) reported that there is relatively little difference in prevalence estimates of mental health concerns in student-athletes and nonathletes and concluded that they are comparable. Yang et al. (2007) reported similar findings to those published by the Sport Science Institute (2015), concluding that there was no difference between student-athletes and the comparison group (nonathletes) in the rates at which the groups experienced depression. Hinkle (1994) and Murray (1993) on the other hand, reported that student-athletes reported higher levels of mental health concerns when compared to their nonathlete peers. While others (Armstrong & Oomen-Early, 2009) found that symptoms of

depression were endorsed at significantly lower rates by student-athletes as compared to their nonathlete peers and Davoren and Hwang (2014) found that both men and women nonathlete college students experience depression and anxiety at greater rates than student-athletes. These findings reveal the uncertainty regarding the differences in nonathlete and college student-athletes' endorsed rates of mental health concerns.

The data regarding mental health concerns among student-athletes versus nonathlete peers are suggestive of greater prevalence among the former, but they are not conclusive. Mental health concerns amongst student-athletes are on the rise (NCAA GOALS, 2015) and more research is needed to understand how to best assist those mental health professionals who support the mental well-being of student-athletes.

Given the theoretical underpinnings of athletic identity coupled with a greater understanding of athletic culture, the results of this study will further contribute to the existing literature of student-athlete mental health. An archival clinical data set from a large, Division I, Mid-Atlantic university counseling center was utilized to assess for differences in endorsed rates of anxiety and depression between collegiate student-athletes and their nonathlete peers. To identify differences in endorsed rates of anxiety and depression, I compared one clinical population to another clinical population (i.e., only those student-athletes and nonathletes who presented to the university counseling center). To date, no study has used clinical data to compare endorsed rates of depression and anxiety between collegiate student-athletes and their nonathlete peers. Thus, this study expands on existing understanding of collegiate student-athlete mental health, while narrowing the focus to comparisons only within a clinical population.

Review of Selected Literature

National Collegiate Athletic Association

According to the NCAA (2017) there are “nearly a half a million college athletes that make up the 19,750 teams that send more than 52,500 participants to compete each year in the NCAA’s 90 championships in 24 sports across 3 divisions”. These college athletes are students at 1,117 colleges and universities across the country (NCAA, 2017). Over the past twenty years, this number has risen significantly. The NCAA has seen an 80% participation increase in female college athletics and a 20% increase in male college athletics (Li et al., 2017). Over the last twenty years, the NCAA has not only seen a rise in the number of college student-athletes, but they have also made changes regarding eligibility requirements. Eligibility requirements outline a specific set of rules and guidelines that collegiate student-athletes must adhere to in order to be eligible to participate in a competitive setting (e.g., maintain a certain grade point average). More information regarding athletic eligibility requirements will be outlined below. The goal for athletic departments is to keep their student-athletes eligible, healthy, and competing at a high level; to manage both can be quite difficult due to the time commitments (explored below) of a collegiate student-athlete.

Understanding the Athletic Culture

Eligibility Requirements

The NCAA requires athletes to maintain amateur status while they are in college; this creates a culture of student first, athlete second. Athletic scholarships are only awarded to about 2% of high school athletes entering a Division I or II institution to participate in collegiate athletics (NCAA, 2017). The Divisional breakdown (I, II, III) represented within the NCAA refers to if scholarships are awarded at a given university and the level of play in which that university participates. Division I athletics recruit the highest performing athletes and compete in the highest level of play, followed by Division II and then Division III. Also, only Division I and

Division II institutions can award scholarships to their collegiate student-athletes. Every year about \$3 billion in athletic scholarships are awarded to about 150,000 student-athletes competing at both the Division I and II levels (NCAA, 2017).

The pressure for the student-athletes to continually perform at a high level in sport and in the classroom directly coincides with their awarded scholarship and eligibility. Hwan and Choi (2016) wrote, “student athletes’ perceived stress was most influenced by academic anxiety” (p. 788), while student-athletes that had higher GPA’s reported lower levels of stress. The combined need to maintain a certain cumulative GPA to remain eligible, along with the demands from the athletic program, are conducive to a culture with increased mental health concerns. Eligibility to compete in college athletics is directly linked to maintaining acceptable academic performance and excelling on the field simultaneously. This presents serious time-management challenges for student-athletes who must balance both sets of demands effectively. This is discussed further below.

Time Commitment. Estimates by Jacobs (2015) suggest that some student-athletes spend 40-50 hours a week in the sports-related activities. These responsibilities can range from mandatory weightlifting sessions, practices or film reviews, team dinners and away games. Hwang and Choi (2016) suggested that time management and identity development are main issues in clinical problems when balancing the dual demands of being a student-athlete. When balancing the time commitment of athletic and academic pressures, student-athletes note increased stress and negative feelings if poor academic and athletic performances are occurring. (Hwang & Choi, 2016). These time management demands occur both on- and off-season. The differences vary only slightly between each major NCAA division. Watson (2006) also found that student-athletes endorsed “limited time/time management” as the number one reason for not

seeking counseling services. To better understand the required academic and athletic activities that could lead to collegiate student-athletes feeling limited in their time availability, I have broken down the requirements by each division in the section that follows. Although the data cannot tease apart specific divisions that each student-athlete competes for, it is imperative to understand that differences may exist depending upon the level of athletics that each individual participates in. This will be further discussed in the limitations and discussion sections in chapter four.

Division I. There are approximately 179,200 Division I student-athletes at 351 colleges and universities across the country (NCAA, 2016). During any given day a Division I student-athlete could spend anywhere between 4.4 hours and 8.6 hours in their respective sports. In a standard week (168 hours), these student-athletes endorsed spending about 38.5 hours in their sport participating in *countable athletic related activities* (CARA) such as practice and competition, and non-CARA related activities such as community service, academic meetings and team fundraising. Two-thirds of the student-athletes noted that they spend just as much, if not more time in their sport during the offseason – suggesting that there really is no such thing as an offseason for student-athletes (NCAA GOALS, 2015).

Results from the NCAA GOALS (2015) study found that student-athletes would like to devote less than eight hours per week to their sport during the offseason and postseason, while most coaches endorsed the opposite and wanted more mandatory practice hours in the postseason and during the offseason. There seemed to be significant disagreement between student-athletes, coaches and administrators in deciding when and how much time should be dedicated to sport. When considering days off from athletic activity, student-athletes wanted to work in collaboration with coaches and administrators to decide when those should be; while half of

administrators and three-quarters of coaches believed that it is solely the head coach's decision (NCAA GOALS, 2015). The discrepancy between student-athletes' and coaches' perspectives of mandatory athletic time could create a culture of silence and tension. Survey results from the 2015 NCAA goals study found that nearly 73% of student-athletes believed that their coach cares about their mental well-being. This number was found to be higher in Division III athletics and lower within some sports. For example, only half of Division I women basketball players endorsed feeling supported by their coaches regarding their mental well-being according to the 2015 Goals study.

In general, women student-athletes were found to be more comfortable talking to their coaches about their mental health than their male student-athlete peers. This could be for a multitude of reasons, but when considering larger contextual factors, it may be because men in general are less likely to report mental health concerns (Addis & Mahalik, 2003). In the promotion of mental well-being amongst student-athletes, it is important that they feel supported by coaches and staff, as well as have an open line of communication with a trusted coach or mentor.

Division II. There are approximately 121,900 Division II student-athletes across 308 colleges and universities (NCAA, 2016). In a given week (168 hours) a Division II student-athlete spends 34 hours in sport-related activities (NCAA GOALS, 2015). These can be CARA and non-CARA activities and is consistent during the season and offseason. Like those participating in Division I athletics, two-thirds of Division II student-athletes endorsed spending just as much time, if not more time, in their sport during the postseason and offseason (NCAA GOALS, 2015). There is also a higher percentage of the overall Division II student population participating in collegiate athletics – one in every eleven students identify as an athlete (NCAA

GOALS, 2015). This is significantly different from the one in every twenty-five students that identify as a student and an athlete at Division I colleges and universities. One in every six Division III students identifies as an athlete (NCAA GOALS, 2015). This study will only be focusing on a large Division I Mid-Atlantic university, but these statistics are suggestive of further research regarding the mental health and wellbeing of those athletes at Division II and III colleges and universities as well.

Division III. There are approximately 190,900 Division III students participating in collegiate athletics at 443 colleges and universities (NCAA, 2016). In any given week of 168 hours a Division III student-athlete will spend about 28.5 hours in their sport, and 40.5 hours a week focusing on academic-related activities (NCAA GOALS, 2015). Nearly half of all student-athletes that compete at the Division III level endorsed spending just as much time, if not more time, on athletics during the postseason and off season (NCAA GOALS, 2015). The NCAA Goals study (2015) did not provide any information regarding CARA-related activities for Division III athletics but did report that their student-athletes participate in a multitude of athletic-related activities such as practices, competitions, strength and conditioning, and film review.

The pressure on student-athletes to be successful on and off the field coincides with significant time demands and limited time for self-care activities. Sharpe (2014) wrote, “Outside of the military, there may be no workplace less conducive to treating mental illness than sports. ... Explanations are excuses, and feelings aren’t explored amid all the testosterone. Sensitive equals soft. Asking for help is viewed as weakness” (p. 14). This type of culture can increase the presence of mental health symptoms, in an already incredibly stressful and pressure-ridden environment.

Student-athlete – Student First

When considering contextual factors of individuals participating in collegiate athletics there are two identities to consider – student and athlete. Wilson and Pritchard (2005) suggested that there are different stressors pertinent to each of these identities. When considering their athletic participation, athletes endorsed feeling stressed about winning, injury and excessive anxiety related to athletics, but regarding their student identity they identified stressors such as test taking and class participation. Jain and Thomas (2002) found that 95% of male athletes and 86% of female athletes were stressed about their academic performance due to their athletic identity (i.e., missing class due to travel and making up missed assignments). In fact, Jain and Thomas (2002) found that over half of female student-athletes and over 40% of male student-athletes reported time as the greatest stressor, and not having enough of it to finish their academic and athletic related responsibilities. Regarding the combination, and often time-clashing identities of a student-athlete, there is evidence to suggest that these combined stressors could have a negative effect on student-athletes' well-being (Wilson & Pritchard 2005).

The pressure of being an athlete in addition to normal student stressors can create an atmosphere that fosters mental health concerns, as well as daily basic needs such as basic sleeping habits. Hwang and Choi (2016) found that poor sleep is a stressor for student-athletes as it can impair physical health and psychological functioning. A student-athlete's sleep patterns and habits are often disrupted during the season due to demands of travel and competition, as well as keeping up with academic requirements. Student-athletes reported that better sleeping habits and more restful sleep hours reduced stress (Hwang & Choi, 2016). Further evidence of this was provided by Armstrong and Oomen-Early (2009) when they found that improved sleep quality in 227 student-athletes led to lower levels of depression.

It has been suggested by some (Armstrong & Oomen-Early, 2009; Proctor & Benzo, 2010) that athletics provides a buffer for traditional college stressors, while others suggest that college student-athletes may be at an increased risk of additional stressors due to their unique status as an athlete (Weigand et al., 2013; Wilson & Pritchard, 2005). Weigand et al. (2013) hypothesized that former student-athletes would endorse higher levels of depression because of the loss of structure, physical fitness, support and identity. However, that was not the case and levels of depression were found to be higher in current college student-athletes. This finding was supported by Trojian (2016), who noted that “depression levels were significantly higher in current college student-athletes (about 17%) compared with former, graduated college athletes (8%)” (p. 1). Kimball and Freysinger (2003) found that student-athletes believe that participating in collegiate athletics is both distressing and stress-relieving.

Identities are dynamic and multidimensional (Kimball & Freysinger, 2003), and while there is overwhelming evidence that collegiate student-athletes are exposed to greater stress than their nonathlete peers, the complex interplay of risk and reward within these multiple identities remains to be clarified. As a result, an aim of this study is to identify groups of collegiate student-athletes that may be at increased risk of experiencing mental health concerns because of different identities (i.e., gender identity and academic status).

Injury. Nixon (1996) found that nearly every college student-athlete he interviewed had experienced at least one significant injury during his or her athletic career and continued to practice and compete despite the seriousness of the pain. Playing through pain is considered a key feature of being a “real athlete,” or what Hughes and Coakley (1991) dubbed *Sport Ethic*. Sport ethic is the defining criterion of what it means to be a real athlete and includes such things as playing through pain, making sacrifices for the game and striving for distinction (Hughes &

Coakley, 1991). Considering this definition of *Sport Ethic* and what it means to be a real athlete, a culture in which athletes are unlikely to report physical pain, let alone any mental health issues, is likely to develop.

Collegiate student-athletes are at an increased risk of injury. Yang et al. (2014) noted that 40-50% of athletes sustain at least one athletic injury during either a game or practice. Originally, researchers focused on the prevalence of mental health rates following an injury, suggesting that the injury would increase the likelihood of a student-athlete experiencing depression or anxiety (Brewer, 1993; Good et al., 1993). Good et al. (1993) found that student-athletes were more likely to experience depressive symptoms following a sports injury if they possessed a strong and exclusive athletic identity. Heird and Steinfeldt (2013) noted that student-athletes who over-identify with the athlete role are at an increased risk of adjustment difficulties following a sport injury. These authors noted significant mental health concerns described by student-athletes following a sports injury.

Recently researchers have focused on understanding the risk of injury to those collegiate student-athletes who may suffer from anxiety or depressive symptoms prior to their injury. Li et al. (2017) explored the converse possibility that athletes experiencing depressive and anxiety symptoms could be at increased vulnerability to athletic injury. After surveying 958 student-athletes, they found that male and female athletes who reported preseason anxiety symptoms were at 2.5 times and 1.9 times greater risk of injury, respectively, when compared to their athlete counterparts reporting no preseason anxiety symptoms.

When considering endorsed preseason depressive symptoms, there was no increased risk for female athletes to sustain injury. However, male athletes were at a 1.6 times greater risk of experiencing a competitive game-related injury if they endorsed preseason depressive symptoms,

as compared to male athletes who endorsed no preseason depressive symptoms (Li et al., 2017). When considering this statistic, it is important to keep in mind that sports male athletes participate in tend to be more physical and thus more likely to experience game-related injuries (e.g., football, wrestling). As noted above, the NCAA found that 31% of male and 48% of female student-athletes reported experiencing depression and anxiety symptoms (Moreland et al., 2017). Li et al. (2017) found rates of depression and anxiety to be greater amongst the student-athlete population than that reported by the NCAA: 46.3% of males and 53.2% of females endorsed experiencing anxiety and/or depressive symptoms.

The combination of being an athlete and a student creates a stressful environment for student-athletes to be successful in both roles. However, it remains unclear if the additional identity as an athlete enhances the presence of mental health concerns. It has been hypothesized that student-athletes do experience greater psychological maladjustment than their nonathlete peers (Storch et al., 2005), but Good et al. (1993) wrote that this is likely due to selective optimization, in which more time and energy is focused on their sport at the expense of other experiences and opportunities. Given these factors, athlete identity needs to be understood in greater context regarding endorsed prevalence rates of mental health concerns in student-athletes.

Athletic Identity

The notion of athletic identity can be derived from the work of developmental theorist Erik Erikson, and his eight psychosocial stages. The college population finds itself between two life stages as students struggle through identity development and intimacy. Erikson (1959) noted that identity formation is a lifelong process, though he highlighted adolescence (ages 12-18) as a crucial stage in the development of one's identity. Identity formation is two-fold; it is developed through identification and through accomplishments (Crain, 2011). Erikson (1959) wrote that a

person develops multiple partial identifications based on appealing personal characteristics of admired others. He also stated that identity formation is developed through personal accomplishments (i.e., positively associated with one's sense of self). Based on this identity development model, student-athletes likely possess strong athlete identity status. Their partial identification likely mirrored their peers and coaches, while their accomplishments were directly associated with the sport in which they excel, thus the development of an athletic identity throughout adolescence is strengthened.

It is believed that during late adolescence, prior knowledge and understanding of one's self is not enough to make the monumental decisions that lie ahead at this age. Decisions regarding where and if to go to college must be made, a deeper sense of self-regarding sex and sexuality must be developed, and one must decide who one wants to be friends with (Crain, 2011). Other than one's sexual identity, these decisions are often made for student-athletes by circumstances or outside parties. When deciding where to go to college, it is often driven by scholarship offers or where they believe they have the best chance to get playing time. And regarding making friends, due to their multiple time demands, they often mingle only with their teammates and other student-athletes. For some student-athletes, the demands of their sport and school often leave little to no time for social interaction outside of athletics. Heird and Steinfeldt (2013) wrote "research has shown that student-athletes may suffer negative consequences in nonathletic areas of life if they over identify with the athlete role" (p. 145). They went on to specifically identify poor social relations and social isolation as few of the many possible negative consequences.

Identity foreclosure. Identity foreclosure is also rooted in Erikson's (1959) psychosocial development model and is "a construct used to describe people who have committed to an

occupation or an ideology without first engaging in exploratory behavior” (Good et al., 1993, p. 2). Research has suggested that over identification with one particular identity without active exploration of other roles can lead to identity foreclosure, which can be brought by the demands of the environment and culture, or it can be a personal choice (Murphy et al., 1996). Good et al., (1993) noted that student-athletes lag behind their nonathlete peers in psychosocial development because they concentrate on sport at the exclusion of other activities, a process termed *selective optimization*. The over identification of an identity because of selective optimization could lead student-athletes to be at increased risk of identity foreclosure (Good et al., 1993; Murphy et al., 1996). Good et al. (1993) specifically highlighted athletic identity to be closely related to identity foreclosure. Murphy et al. (1996) found Division I student-athletes and upper-class student-athletes to be more foreclosed than their nonathlete peers. Miller and Kerr (2003) also found that student-athletes in high profile sports (i.e., basketball, football & ice hockey) endorsed significantly higher identity foreclosure scores than athletes in other sports.

Athletic Identity and Mental Health. Researchers have noted connections between athletic identity and mental health concerns (Brewer, 1993; Good et al., 1993; Heird & Steinfeldt, 2013). Heird and Steinfeldt (2013) found multiple negative consequences (e.g., poor emotional well-being) a student-athlete may suffer from in nonathletic areas of life when they over identify with the athlete role. Brewer (1993) found significant results between athletic identity and an injured athletes’ endorsed levels of depression. This was found to be true between those student-athletes with real or imagined injuries and identified strongly with their athletic identity. That is, even student-athletes with “imagined” injuries (per Brewer, 1993) suspected that they would endorse higher levels of depressive symptoms due to the loss of the athlete role.

Depression and Anxiety

Research has shown that a college student's identity as an athlete may account for differences in reported psychological concerns (Hinkle, 1994; Murray, 1997; Parham, 1993); though a clear consensus among researchers about the rates in which college student-athletes experience depressive symptoms has not yet been reached. Watson and Kissinger (2007) noted that anywhere between 10%-15% of student-athletes struggle with a mental health concern that warrants professional help, while Trojian (2016) found that between 15.6%-21% of college student-athletes endorse experiencing depressive symptoms over the last 12-months. Weigand et al. (2013) found that about 17% of college student-athletes struggle with significant depressive symptoms, while Wolanin et al. (2015) and Yang et al. (2007) attained similar findings, with nearly 21% of student-athletes reporting depressive symptoms. Still others (Davoren & Hwang, 2014) have found that estimates of depression in female student-athletes could be as high as 28%. As compared to the national average of 18-25-year-olds that endorsed depression symptoms (8.7%), the rates of depressive symptoms amongst student-athletes is much higher (Wolanin et al., 2015) and in some studies as much as 20% higher.

These findings show that depression levels in college student-athletes are higher than that of the college student national average, and some researchers suggest that the numbers could be higher. Weigand et al. (2013) concluded that the negative stigma associated with depression could lead to under diagnosis amongst the student-athlete population. It is believed that student-athletes may attempt to ignore or cover up symptoms that could be perceived as weak. Carr and Davidson (2014) wrote, "student-athletes, coaches and staff tend to minimize mental disorders or psychological distress because of the expectations of strength, stability and mental toughness

inherent in the sports culture” (p. 17). Even when considering physical pain, student-athletes from a very young age are taught to “play through the pain.”

Similar to the national population, there are high rates of comorbidity between depression and anxiety. Li et al. (2017) found that 76% of student-athletes that endorsed feeling depressed also experienced some anxiety symptoms, while 57% of the student-athletes that endorsed feeling anxious also experienced some depressive symptoms. In their sample, one-third of the student-athletes reported experiencing anxiety symptoms and one-fifth of the student-athletes reported experiencing depressive symptoms. These numbers are inconsistent as compared to their nonathlete peers. It was recently reported that about 40% of undergraduate students experience anxiety, while 33% experience depressive symptoms (Li et al., 2017). These numbers are higher among the nonathlete population, though literature has been inconsistent in concluding the difference in mental health and wellbeing between student-athletes and their nonathlete peers.

The NCAA GOALS (2015) found significant increases between their 2010 and 2015 survey results regarding the mental health concerns of student-athletes across all three divisions. The 2015 data highlight that there was an overall increase in the number of student-athletes experiencing mental health concerns such as anxiety and depression, and nearly 30% of student-athletes endorsed feeling exceedingly overwhelmed during the past month. One-third (though higher in Division I football and lower in all Division III athletics) of the student-athletes reported feeling exhausted by the physical demands of their sport, and one-fourth reported feeling exhausted by the mental demands of their sport. Despite the increase in reported mental health concerns amongst student-athletes, they still significantly underutilize mental health services on college campuses.

Cox et al. (2017) wrote, “college athletes still appear to be reluctant to seek out help for mental health concerns and harbor significantly less positive attitudes toward help-seeking behavior and counseling outcomes than nonathletes” (p. 15). Moreland et al. (2017) found that college student-athletes reported favorable attitudes about seeking mental health services, though they were less likely to be the recipient of said services when compared to their nonathlete peers. Cox et al. (2017) noted that 25.7% of their sample did not know how or where to access mental health services and 44% of college student-athletes had not received any formal mental health education from their athletic department. Storch et al. (2005) wrote that recent publications suggest that student-athletes experience greater psychological maladjustment when compared to their nonathlete peers, but student-athletes greatly underutilize school counseling and mental health services. Considering that anywhere between 10 to 53.2% of student-athletes may be struggling with mental health concerns, it is imperative that 100% of student-athletes on every campus are, at the very least, provided information on how to seek out services should they feel the need to do so.

Improving the accuracy of reported prevalence rates of mental health concerns amongst student-athletes is imperative to help address and combat them, as well as to develop preventative programming. A solid and well-defined understanding of the presentation of mental health concerns among student-athletes can help university counseling centers and athletic departments better plan for hiring, outreach initiatives and potentially even increase student-athlete performance. Provided these initiatives are effective, they could potentially help decrease the number of athletic injuries as well, as a result of preventative measures used to lessen the effects of depression and anxiety. From this study I hope to further contribute to the conversation regarding endorsed rates of anxiety and depression in collegiate student-athletes, as well as

identify group(s) of student-athletes that may be at increased risk of experiencing higher levels of depression or anxiety. For this study I used a large clinical dataset to further contribute to existing literature regarding endorsed rates of depression and anxiety amongst a clinical population. The data in this study provided a new sample of collegiate student-mental health concerns to hopefully further progress researchers' awareness of prevalence rates of depression and anxiety within this specific population, as well as compared to a clinical set of their nonathlete peers. While the above statistics highlight the consistent ambiguity amongst the current literature, this study did not clarify existing data, but rather it contributed to the growing consensus that collegiate student-athlete mental health is an area of research that needs to continually be explored. While our current state of knowledge regarding student-athlete mental health does reveal some inconsistencies in the data, there is a consensus that this population does present with elevated risk for such issues as depression and anxiety. The data from the current study bolsters this consensus and contributes to a more accurate perception regarding the seriousness of mental health concerns within the college student-athlete population.

The Present Study

Research Questions

Researchers have been attempting to understand the athletic identity of college students and their overall mental health and well-being for almost 100 years (Cowley, 1930; Hall, 1928). Previous researchers have been consistent when discussing the difference between the prevalence rates of mental health in male and female student-athletes (Cox, Ross-Stewart & Foltz, 2017; Trojian, 2016; Yang et al., 2007) as well as when studying prevalence rates of freshman student-athletes versus their more senior peers (Yang et al., 2014). Researchers have found that women student-athletes and freshman student-athletes are at an increased risk of

mental health concerns as compared to their male and upper-class student-athlete peers, respectively. Notably, Lally and Kerr (2005) found that upper-class student-athletes were more likely to invest in their student/career identity as they neared the end of their collegiate experience. It was described as a “strong, but not exclusive” (Lally & Kerr, 2005, p. 281) commitment to their athletic identity as they prepared for life after sport. Though Murphy et al. (1996) found that upper-class student-athletes were more foreclosed than their nonathlete peers, they were likely less foreclosed than younger (freshman) student-athletes as they have begun the process of active exploration and career planning. This is a potential explanation regarding why researchers (Yang et al., 2014) found that freshman student-athletes are more likely to endorse higher prevalence rates of anxiety and depression as compared to their upper-class peers. The narrowed athletic identity combined with lack of exploration could result in identity foreclosure and thus greater mental health concerns related to being a successful athlete.

While the findings of various studies within the student-athlete population have been consistent, the prevalence rate of mental health problems among student-athletes has not, nor have comparisons of mental health problems between student-athletes and their nonathlete peers revealed a clear picture. In this study I examine the prevalence rates of anxiety and depression among student-athletes, examine demographic variables to identify sub-groups that may be at increased risk of depression and anxiety, and compare prevalence rates of mental health issues between student-athletes and nonathlete students within a large clinical data set. In this study the following six hypotheses are addressed:

H₁. Mean ratings of depression will be significantly different between student-athletes and their non-student-athlete peers.

H₂. Mean ratings of anxiety will be significantly different between student-athletes and their non-student-athlete peers.

H₃. Mean ratings of depression will be significantly different between female student-athletes and male student-athletes.

H₄. Mean ratings of anxiety will be significantly different between female student-athletes and male student-athletes.

H₅. There will be a significant difference in mean depression scores between individuals in different academic status categories.

H₆. There will be a significant difference in mean anxiety scores between individuals in different academic status categories.

Chapter II: METHODS

In this study I examined the prevalence rates of anxiety and depression among student-athletes, examined demographic variables to identify sub-groups that may be at increased risk of depression and anxiety, and compared mean ratings of mental health issues between student-athletes and nonathlete students in a large clinical data set. In the first two research hypotheses I looked for differences in anxiety and depression scores as DVs, and athlete/nonathlete status as the IV. For the next two hypotheses I examined differences in (1) depression, and (2) anxiety (the DVs) and gender identity (the IV) among student-athletes. In hypothesis 5 I used a two-factor design that included gender identity and class standing as the IVs, and depression scores as the DV. Finally, in hypothesis 6, I also used a two-factor design that included gender identity and class standing as the IVs, and anxiety scores as the DV.

Participants

According to College Tuition Compare (West Virginia University Student Population and Demographics, 2020) in 2018-2019 there were 26,864 students enrolled at the Division I Mid-Atlantic University (both undergraduate and graduate enrollment) used in this study. There were 13,439 (50%) men, and 13,425 (50%) women enrolled. It should be noted that this binary sexual identity question may not encompass characteristics of students who identify as gender non-binary, or other identified. Of the total 26,846 students enrolled the distribution by Race/Ethnicity is as follows: 21,221 identify as White (79%), 1,042 identify as Black (3.9%), 488 identify as Asian (1.8%), 981 identify as Hispanic or Latino (3.7%), 21 identify as Native Hawaiian or Other Pacific Islanders (0.078%) and 28 identify as American Indian or Native American (0.10%). There are also 963 students who identify with Two or More Races (3.6%) and 92 students that did not specify (0.34%). Of the total 26,846 students enrolled, the age

distribution is as follows: 22,340 students were under the age of 25 (83%), 4,522 were over the age of 25 (17%) and 597 were under the age of 18 (2.2%). The participants in this study are students from this university that presented to the University Counseling Center (UCC) in 2018-2019.

Between August 1, 2018, and July 31, 2019, there were 2,579 unique clients at the university counseling center that was used in this study. Of those 2,579 students, 113 self-identified as varsity athletes, or about 4.4% of the overall student-population that presented to the university counseling center. That is 4.4% of the population answered yes to “Are you a varsity athlete?” which is a forced choice “yes” or “no” question about the client’s student-athlete status on the Standardized Data Set (SDS). After the data were cleaned (see Chapter III for more information) the study included 1,756 students who did not identify as varsity athletes, and 97 students who did so identify. Of the 1,756 nonathlete population that was included in this study, the gender identity breakdown is as follows: 708 men (40%), 1,017 women (58%), 23 self-identified (i.e., did not identify a gender selection) (1.3%), 5 transgender (.28%) and 3 no responses (.17%). Of the 97 student-athletes that were included in this study 38 identified as men (39%) and 59 identified as women (61%). Of the 1,756 nonathlete population included in this study, the Race/Ethnicity distribution is as follows: 1,481 identify as White (84%), 73 identify as Black or African-American (4.2%), 68 identify with Two or More Races (3.9%), 59 identify as Asian (3.4%), 53 identify as Hispanic/Latino (3.0%), 7 students did not respond (0.4%), 6 identified as Native Hawaiian or Other Pacific Islanders (0.34%), 5 self-identified (e.g., Russian) (0.28%), and 4 identified as American-Indian or Alaskan Native (0.22%). Of the 97 student-athlete population, the Race/Ethnicity Distribution is as follows: 72 identify as White (74%), 16 identify as African-American or Black (16.5%), 4 identify as Hispanic (4.1%), 3 identify with Two or

More Races (3.1%) and 2 self-identified as Biracial (2.1%). In the 1,756 nonathlete population, 1,680 were between the ages of 18-24 (96%) and 76 were older than 25 (4.3%). In the 97 student- athlete population, 96 were between the ages of 18-24 (99%), and one did not respond.

Table 1

	Number of participants	Percentage
Gender		
Male	708	40%
Female	1017	58%
Transgender	5	.28%
Self-identified	23	1.3%
No response	3	.17%
Race/Ethnicity		
White	1481	84%
Black Or African-American	73	4.2%
Two Or More Races	68	3.9%
Asian	59	3.4%
Hispanic/Latino	53	3.0%
Did Not Respond	7	0.4%
Native Hawaiian Or Other Pacific Islander	6	0.34%
Self-Identified	5	0.28%
American-Indian Or Alaskan Native	4	0.22%
Age		
18-24 years old	1680	96%
25 years or older	76	4%
Class status		
Freshman/First-Year	539	31%
Sophomore	472	27%
Junior	364	15%
Senior	381	22%

Students present to university counseling centers in multiple ways to access services. They may be self-referred and call to schedule an appointment or utilize the center's drop-in system. Clients may also be mandated for several reasons, most likely referred by the university for remediation following drug or alcohol use. Student-athletes may be required by coaches to present for psychoeducation evaluation or initial evaluation after arriving on campus for the first

time to screen for differential diagnoses that may contribute to academic performance or assess for elevated mental health concerns which could affect performance and transition to collegiate athletics.

To create equal sample sizes, I randomly selected a non-student athlete total sample 97 students. Excel random number generator was used to create equal group sizes, and then the data were transferred to SPSS for analyses. Following the random selection, descriptive statistics were conducted to test for normal distribution and ensure that the distribution closely matches the comparison group (i.e., student-athletes). Comparisons were made between student-athletes and nonathletes and their endorsed levels of depression and anxiety on the Counseling Center Assessment of Psychological Symptoms (CCAPS) instruments. Differences between male and female student athletes' endorsed rates of anxiety and depression on the CCAPS as well as differences between academic status (i.e., freshman, sophomore, junior and senior) were assessed.

Data and Measures

The data in this study were collected by a University Counseling Center (UCC) at a large, Division I, mid-Atlantic University. The data were collected from August 1, 2018, to July 31, 2019. The UCC collected data utilizing the Standardized Data Set form (SDS) and the Counseling Center Assessment of Psychological Symptoms (CCAPS).

Standardized Data Set form (SDS; Center for Collegiate Mental Health, 2018). The SDS was developed after seeking input from staff at more than 100 counseling centers to better understand the types of demographic questions typically asked of students who are seeking services. The SDS averages about 50 questions, but the actual number at each center varies as not all centers use every question. Each year it is reviewed and updated to best assess the needs

of clients seeking services. While every university counseling center (UCC) has the right to leave out any question that it believes isn't relevant to their population, there are core items that every UCC is required to ask on their SDS to allow for standardization and reliable data collection (Locket et.al., 2012). I could find no psychometric properties published for this instrument.

Demographic variables are collected on the SDS as well as relevant information about mental health history to aid the clinician during intake. It also includes a screen for any high-risk variables such as suicidality or self-injurious behaviors. All demographics variables used in this study are from the SDS. The student-athlete group was identified from the data set by focusing on participants who endorsed "yes" to the item, "Do you currently participate in any of the following organized college athletics: Varsity?". This study also assessed participants' answer on the SDS that asks clients to identify their current academic status. Demographics (i.e., self-identified gender identity and self-identified racial/ethnic identity) were collected to ensure equitable sample sizes. Client varsity status and academic status were compared between student-athletes' and nonathlete peers' scores on the Counseling Center Assessment of Psychological Symptoms -62.

The following questions from the SDS were used in this study:

- Q1191 Gender Identity?
 - Dropdown menu: Man, Woman, Transgender, self-identify
- Q23 Academic Status?
 - Dropdown menu: Freshman/First-year, sophomore, junior, senior, graduate/professional degree student
- Q1955 Varsity?
 - Dropdown menu: yes or no

Counseling Center Assessment of Psychological Symptoms-62 (CCAPS; Locke et al., 2011). The current version of CCAPS was updated in August 2018 and normed on 388,000 participants (CCMH, 2018). The original CCAPS was developed in 2001 at the University of Michigan to help assess key domains of college student mental health issues. It is free and used across UCCs nationwide. The data contribute to the consortium at Pennsylvania State University (PSU) to better understand and research the needs of college students and their mental well-being. The questions are based on a 5-point Likert-type scale ranging from 0 (*not like me at all*) to 4 (*extremely like me*), and clients are instructed only to respond based on their feelings over the last two weeks.

The strength of the CCAPS-62 is that it is a useful clinical and empirical tool for college counseling centers. The instrument assesses eight different subgroups (Depression, Eating Concerns, Substance Use, Generalized Anxiety, Hostility, Social Anxiety, Family Distress, and Academic Distress). It is important to note, that the Generalized Anxiety scale is not associated with a diagnosable Generalized Anxiety Disorder (GAD) as identified in the DSM-5. In this study I used GAD to describe the generalized anxiety scale but am not referring to a generalized anxiety diagnosis.

The entire CCAPS-62 was tested for internal consistencies on all eight subscales. It was also analyzed for specific cultural groups, including gender, race/ethnicity and international student status. For the total sample, Locke et al. (2011) reported reliability coefficients to be greater than .80 and for specific cultural groups analyzed internal consistency estimates ranged between .78 and .92. Internal consistency was strong for both the total sample and subgroups.

The test-retest reliability measure yielded strong results after 1-week and 2-week periods. The 1-week and 2-week intervals correspond with the typical treatment modality of a college

counseling center. The test-retest reliability coefficients in the 1-week group ranged from $r = .78$ (Generalized Anxiety) to $r = .93$ (Depression). The 2-week group ranged from $r = .84$ (Generalized Anxiety) to $r = .92$ (Depression).

This study used only the Depression and Generalized Anxiety indices. Research using factor analyses, reliability, and construct validation notes that the CCAPS accurately assesses for depression and anxiety. There are also modest correlations between CCAPS and other well-established self-report scales measuring distress (Locke et al., 2012). In the total sample, all indices had a Cronbach's alpha value higher than .80. As noted above, six of CCAPS-62 domains: eating concerns, hostility, social anxiety, family distress, substance use and academic distress were not analyzed for this study. Eating concerns have historically been well researched within the collegiate student-athlete population (Carter & Rudd, 2005; Greenleaf et al., 2009; Gutgesell et al., 2003) with estimates anywhere between 18-25% of college student-athletes reporting varying levels of eating disorder concerns. Social Anxiety, hostility, academic distress, family distress, and substance use, while relevant to general mental health concerns, are currently not relevant for this study.

Regarding the depression index, Locke et al. (2011) reported a Cronbach alpha coefficient for the CCAPS-62 for a total population of 22,060 to be 0.91. The depression index was found to correlate moderately strongly with the related measure of the Beck Depression Inventory (BDI; Beck et al., 1961) at $r = .72$.

Regarding the generalized anxiety index, Locke et al. (2011) reported a Cronbach alpha coefficient for CCPAPS-62 for a total population of 22,060 to be .85. The generalized anxiety index was found to correlate moderately strongly with the related measure of the Beck Anxiety Inventory (BAI; Beck et al., 1988) at $r = .64$.

The universities that contributed to this data set have autonomy in regard to policy and procedure in assessment of the data. Thus, variability exists when and how often counseling centers choose to administer the CCAPS. Consequently, some centers may choose to administer the CCAPS every time a client presents to the center, or once every three sessions or four sessions, etc. The intervals in which the CCAPS is administered varies based on each individual college counseling center policy. For this study, the UCC collects the CCAPS-62 from every new client, as well as returning clients who have not presented to the center in over a year. The author (Locke et.al., 2011) reported that the CCAPS-62 takes anywhere between 7-10 minutes to complete. Clients complete the CCAPS-62 upon arrival to the center using an iPad.

Design and Analysis

This study was designed as a between-subjects, quantitative-descriptive, cross-sectional, design that defines and describes the nature of the relationships between a continuous dependent variable (anxiety or depression) and the two categorical independent variables (student-athlete vs. non-student-athlete and male vs. female). In addition, I analyzed the relationship of anxiety and depression to academic status for the student-athlete sample. The design was selected as a means of addressing the research questions under investigation for the study. An independent samples *t*-test was used to analyze the first four hypotheses. The last two hypotheses were analyzed using two-way ANOVAs. A two-way ANOVA was chosen for the last two hypotheses because prior research has shown that gender identity and academic status can have a significant effect on endorsed levels of depression and anxiety among collegiate scores as the dependent variables, respectively, for each hypothesis. The two-level independent variable for each hypothesis is gender identity (male vs. female), and the four-level independent variable is academic status (freshman, sophomore, junior, senior). Gender identity and class standing may

exert their effects separately, and/or in through interaction effect. If there was a significant interaction, a post-hoc analysis was conducted to assess how class standing interacts with gender identity on the dependent variable. For an independent samples *t*-test and two-way ANOVA to be used, the following six assumptions must be met (Laerd Statistics, n.d.):

1. The study has one dependent variable that is measured on a continuous level;
 - a. Each hypothesis have one continuous dependent variable, either anxiety or depression measured on a scale of 0-4 on the CCAPS-62. The sum produces an average score between 0-4. This assumption has not been violated.
2. The study has two independent variables that consist of two categorical, mutually exclusive groups;
 - a. The first four hypotheses utilize two independent variables that consist of the categorical variable student-athlete or non-student-athlete and, the categorical variable male or female. Both are answered in a forced-choice question on the SDS. Gender identity and athlete status were analyzed separately in these hypotheses. This assumption has not been violated.
 - b. Hypotheses five and six have two factors (IVs) that consist of two or more categorical independent groups.
3. The study includes independence of observations.
4. No participant can be in each independent variable (i.e., no one in the male group can also be in the female group and no one in the student-athlete group can also be in the non-student-athlete group). This assumption has not been violated. The study had significant outliers in the two groups of the independent variable in terms of the dependent variable;

- a. The data contained outliers and was assessed for effect on the study. More information regarding outliers is provided in chapter three, and further explanation as to why removing the outliers was important given their value and impact on the results. Given the size of the dataset it is not predicted that removal of an outlier would significantly affect the results.
5. The dependent variable will be approximately normally distributed for each group of the independent variable;
 - a. It was predicted the data will be normally distributed for each group of independent variables given the size of the sample. The independent samples *t*-test requires only *approximately normal data* (Laerd, n.d.) and will still provide valid results given this study's sample size. To test for normality, I used the Shapiro-Wilk test. It was not predicted that this study will violate this assumption and given the robust nature of an independent samples *t*-test with $n > 30$, the relevant statistics were computed and concerns regarding normal distribution are discussed in the results section (Laerd, n.d.).
 - b. It was predicted the data will be normally distributed for each cell of the design. The two-way ANOVA requires only *approximately normal data* (Laerd, n.d.) and will still provide valid results given this study's sample size. To test for normality, I used the Shapiro-Wilk test. It is not predicted that this study will violate this assumption, and given the robust nature of a two-way ANOVA, the statistical analysis will still be run and then the violation documented in the results section (Laerd, n.d.).
6. The data will reflect homogeneity of variance.

- a. It was not predicted that this assumption will be violated. In order to ensure equal sample sizes, I used Excel random number generator to create equal group sizes. To test for homogeneity of variance, the Levene's test for equality of variance was computed.

Information regarding these six assumptions as they are reflected in the data are provided in chapter three and chapter four were pertinent and relevant. The means of the depression and anxiety scales on the CCAPS-62 drawn from the student-athlete vs. nonstudent-athlete population was compared using the *t*-test for independent samples. The means of the depression and anxiety scales on the CCAPS-62 drawn from the female student-athlete vs. male student-athlete population will be compared using the *t*-test for independent samples. As discussed above, 2 two-factor ANOVAs will be run on the depression and anxiety scores with gender identity having two levels as the first factor, and class with 4 levels as the second factor. Tukey's HSD post-hoc test will be used if class standing is significant. Tukey's HSD will also be conducted on the interaction term if it is found to be significant.

Procedures

Data were gathered using convenience sampling through participation in counseling services. Students were asked to fill out intake paperwork (i.e., SDS and CCAPS-62) during the initial visit to the counseling center. Upon obtaining Institutional Review Board (IRB) approval at West Virginia University (WVU) I contacted Seth Haxel, M.A., who currently serves as data point person at the UCC where data were collected. Upon obtaining the data, they were kept in a locked file on the author's personal computer. The computer and the locked file are both password protected. Only this author and the Principal Investigator, Dr. Jeffrey Daniels, were

able to access the data for completion of this research project. The dataset was only used for investigation within the scope of this research project.

The purpose of this study is to examine the prevalence rates of anxiety and depression among student-athletes, examine demographic variables to identify sub-groups that may be at increased risk of depression and anxiety, and compare mean rates of mental health issues between student-athletes and nonathlete students. This study addressed the following six research questions:

1. Do the mean self-reported ratings of depression, as measured by the depression scale on the CCAPS-62, differ between student-athletes and their nonathlete peers?
2. Do the mean self-reported ratings of anxiety, as measured by the anxiety scale on the CCAPS-62, differ between student-athletes and their nonathlete peers?
3. Do the mean self-reported ratings of depression, as measured by the depression scale on the CCAPS-62, differ between female student-athletes and their male athlete peers?
4. Do the mean self-reported ratings of anxiety, as measured by the anxiety scale on the CCAPS-62, differ between female student-athletes and their male athlete peers?
5. Among student-athletes, is there a statistically significant difference in the mean depression scores between males and females based on academic status (freshman, sophomore, juniors and senior)?
6. Among student-athletes, is there a statistically significant difference in the mean anxiety scores between males and females based on academic status (freshman, sophomore, juniors and senior)?

Hypotheses and Analysis

Based on the previous literature and research questions, the following six hypotheses have been established for the current study:

H1. Mean ratings of depression will be statistically significantly different between student-athletes and their nonathlete peers.

The above hypothesis was assessed using an independent samples *t*-test. The design assesses the levels of depression between two independent groups, student-athletes vs. nonathlete students, to reveal if there is a mean difference in depression scores between the two groups. Though research has historically shown nonathletes endorse higher levels of depression, I chose to use a non-directional hypothesis due to the limitations of the *t*-test analysis when predicting direction and given that the sample is a clinical population it was possible that the data was already skewed toward higher levels of mental health concerns.

H2. Mean ratings of anxiety will be statistically significantly different between student-athletes and their non-student-athlete peers.

The above hypothesis was assessed using an independent samples *t*-test. The design assesses the levels of anxiety between two independent groups, student-athletes vs. nonathlete students, to reveal if there is a mean difference in anxiety scores between the two groups. Though research has historically shown nonathletes endorse higher levels of anxiety, I chose to use a non-directional hypothesis due to the limitations of the *t*-test analysis when predicting direction and given that the sample is a clinical population it was possible that the data was already skewed toward higher levels of mental health concerns.

H3. Mean ratings of depression will be statistically significantly different between female student-athletes and male student-athletes.

The above hypothesis was assessed using an independent samples *t*-test. The design assesses the levels of depression between two independent groups, female student-athletes vs. male student-athlete, to reveal if there is a mean difference in depression scores between the two groups. Though research has historically shown female student-athletes endorse higher levels of depression, I chose to use a non-directional hypothesis due to the limitations of the *t*-test analysis when predicting direction and given that the sample is a clinical population it was possible that the data was already skewed toward higher levels of depression.

H4. Mean ratings of anxiety will be statistically significantly different between female student-athletes and to male student-athletes.

The above hypothesis was assessed using an independent samples *t*-test. The design assesses the levels of anxiety between two independent groups, female student-athletes vs. male student-athlete, to reveal if there is a mean difference in anxiety scores between the two groups. Though research has historically shown female student-athletes endorse higher levels of anxiety, I chose to use a non-directional hypothesis due to the limitations of the *t*-test when predicting direction and given that the sample is a clinical population it was possible that the data was already skewed toward higher levels of anxiety.

H5. Among student-athletes, there will be a significant difference in mean scores of depression between individuals in different academic status categories based on sex.

The above hypothesis was tested using a two-way, 2X4 ANOVA. The continuous dependent variable (depression) is measured on the CCAPS-62 that results in an average score output between 0-4. The first factor functioning as an independent variable is gender identity and the second factor is academic status which contains four levels, freshman, sophomore, junior, senior. All relevant parametric assumptions will be addressed before the statistical analysis.

Please see above under Design and Analysis regarding how any violated assumptions will be addressed. The results will first assess for a statistically two main effects and a significant interaction effect. In total, the two-way ANOVA will determine the significance of three effects on depression scores

1. A main effect of gender identity
2. A main effect of academic status
3. An interaction effect between gender identity and academic status

H6. Among student-athletes, there will be a significant difference in mean scores of anxiety between individuals in different academic status categories.

The above hypothesis was tested using a two-way, 2X4 ANOVA. The continuous dependent variable (anxiety) is measured on the CCAPS-62 that results in an average score output between 0-4. The first factor functioning as an independent variable is gender identity (male, female) and the second factor is academic status which contains four levels, freshman, sophomore, junior, senior. All assumptions will be assessed before the statistical analysis. The results will first assess for a statistically significant interaction effect, and then two main effects. In total, the two-way ANOVA will determine the significance of three effects:

1. An interaction effect between gender identity and academic status
2. A main effect of gender identity
3. A main effect of academic status

Post-hoc tests using Tukey's HSD will be conducted on class standing if it is significant. The Type I error rate will be set at $p = .05$ for all analyses in the series.

CHAPTER III: RESULTS

There were 2,578 unique client files provided by the electronic medical record (Titanium) system at the selected university counseling center between August 1, 2018 and July 31, 2019. Of those, 113 self-identified as Varsity athletes, or approximately 4.4% of the overall population that presented during that year. After identifying missing data from the Standardized Data Set (SDS), 649 participants were removed from the nonathlete student population and 13 were removed from the Varsity student-athlete population. Examples of data points being removed included those students that identified as graduate students, as they were beyond the scope of this project. According to Speer and Newman (1996), 90% of psychotherapy outcome measures need to be completed to be considered valid. Given this information, 192 data points were removed for not answering more than 90% (i.e., 56) of the Counseling Center Assessment of Psychological Systems (CCAPS-62) questions. Two questions on the Depression scale (*I am enthusiastic about life* and *I like myself*) were reverse scored. The data were then analyzed for inconsistencies in scoring (e.g., someone selecting all zeroes) on the Depression and Generalized Anxiety scales. In the nonathlete student population, 46 participants selected a “0” on every question. Given the nature of the CCAPS-62, and items needing reverse coding for validity, it is likely that these students did not accurately assess themselves on the CCAPS-62 and those 46 participants were removed. Two participants from the student-athlete population were removed for similar reporting.

The final sample sizes consisted of 1,756 nonathlete students and 97 varsity student-athletes, for a total *N* of 1,853. The varsity student-athlete group represents about 5.2% of the total sample after data cleaning. A random sample generator in Excel was used with the 1,756 nonathlete

participants to generate a group of 97 participants. This was to ensure equal sample sizes for comparisons. Table 1 displays the demographics for the nonathlete and student-athlete groups.

Table 2

Participant Demographics

	NONATHLETE DEMOGRAPHICS		STUDENT-ATHLETE DEMOGRAPHICS	
	Number of participants	Percentage	Number of participants	Percentage
GENDER				
Male	34	35%	38	39%
Female	59	61%	59	61%
Self-identified [participant did not identify as male or female]	3	3.0%	0	0%
No response	1	1.0%	0	0%
RACE/ETHNICITY				
White	86	92%	72	74%
Black or African American	3	3.1%	16	16.5%
Two Or More Races	3	3.1%	3	3.1%
Asian	3	3.1%	0	0%
Hispanic/Latino/a	0	0.0%	4	4.1%
Native Hawaiian or other Pacific Islander	1	1.0%	0	0%
Biracial	0	0%	2	2.1%
AGE				
18-24 years old	94	97%	96	99%
25 years or older	3	3.0%	0	0%
Did not respond	0	0%	1	1%
ACADEMIC STATUS				
Freshman/First-Year	25	26%	46	47%
Sophomore	25	26%	18	19%
Junior	21	21%	14	14%
Senior	26	27%	19	20%

The average age of participants in each group fell in the 18-24-year-old range (97% of the nonathlete student population and 99% of the varsity student-athlete population). The number of male and female participants in each group was similar (nonathlete student: male – 35% female – 61%; varsity student-athletes male – 39% female – 61%). The number of participants in each class (i.e., freshman, sophomore, junior, senior) was evenly distributed in the nonathlete student group. In the varsity student-athlete group of the largest percentage of participants self-identified as Freshman/First-year (47%).

To assess for normality of the distribution of scores, the Shapiro-Wilk/Kolmogorov-Smirnov tests were performed. For the nonathlete student group, both generalized anxiety (GAD) and depression (DEP) on the Kolmogorov-Smirnov test did not violate normality ($p = .200$) and neither did GAD for the Shapiro-Wilk test ($p = .232$). However, DEP revealed a violation of normality for the Shapiro-Wilk test ($p = .006$). After assessing the Q-Q plot (Understanding Q-Q Plots | University of Virginia Library Research Data Services + Sciences, n.d) and box plot (there were no outliers) it was determined that the deviation from normal distribution is minor and is likely non-significant for the purpose of this study.

The test for normality for varsity GAD and DEP scores was violated for both Shapiro-Wilk ($p < .05$) and Kolmogorov-Smirnov ($p < .05$). Assessment of the Q-Q plot and box plot (no outliers) again suggested no more than minor deviations from normal. Field (2009) noted that it is common to find significant results with minor deviations from normality. Furthermore, with a sample size greater than 50 ($n = 194$ in this study) it is unlikely that this deviation from normality significantly impacted the statistical analyses (Laerd Statistics, n.d.).

Figure 1*Standardized Residual Histogram for Anxiety* **Figure 2***Standardized Residual Histogram for Depression*

Histograms of residual errors were also generated for both GAD and DEP (See Figures 1 and 2). Both figures suggest challenges to normality. Due to the nature of the sample, it was expected that there would be some deviation from normality as the sample is a clinical population (i.e., it is expected that people are in varying levels of distress, which does not conform to a statistically normal distribution). It is likely the error represents random variation in the data due to unexplained but nonmeaningful variance (James Bartee Communication, 2020). Figure 1 displays the results for anxiety scores and Figure 2 displays the results of the depression scores.

Figure 3

Normal Q-Q Plot of Anxiety

Figure 4*Normal Q-Q Plot of Depression*

The normal Q-Q plot shows slight deviation from normality for both GAD and DEP (Figures 3 and 4). The circles represent scores on the GAD scale and DEP scale, respectively, while the line represents the expected scores for a normal distribution. The figures above were included for further clarification of the assessment of normality for the dependent variables. It is not uncommon that scores differ from normality with larger sample sizes. It was determined to continue with the analyses as both the *t*-test and ANOVA are robust statistical methods and likely unaffected by a slight deviation from normality (Laerd Statistics, n.d.). Following the test for normality, all other assumptions were assessed, and it was concluded that no other assumptions were violated. The following hypotheses were tested.

Hypothesis Testing Results

H1:

Mean ratings of depression will be statistically significantly different between student-athletes and their non-student-athlete peers. Mean nonathlete student DEP scores were 1.91 ± 1.01 and the varsity student-athletes DEP mean scores were 1.31 ± 1.00 . There was homogeneity of variances for depression scores for nonathlete students and varsity student-athletes, assessed by Levene's test for equality of variances ($p = .763$). Nonathlete student DEP scores were .60, 95% CI [.32 to .89] higher than varsity student-athlete DEP scores. There was a statistically significant difference in mean DEP scores between nonathlete students and varsity student-athletes $t(192) = 4.161, p < .001$. The effect size for this analysis ($d = .598$) was found to exceed Cohen's (1988) convention for a medium effect size. This result suggests nonathletes endorse higher self-reported levels of depression than student-athletes. Therefore, the null hypothesis is rejected.

H2:

Mean ratings of anxiety will be statistically significantly different between student-athletes and their non-student-athlete peers. Mean nonathlete student GAD scores were $2.04 \pm .99$ and the varsity student-athletes' GAD scores were 1.25 ± 1.03 . There was homogeneity of variances for anxiety scores for nonathlete students and varsity student-athletes, assessed by Levene's test for equality of variances ($p = .547$). Nonathlete student GAD scores were .786, 95% CI [.50 to 1.07] higher than varsity student-athlete GAD scores. There was a statistically significant difference in mean GAD scores between nonathlete students and varsity student-athletes $t(192) = 5.407, p < .001$. The effect size for this analysis ($d = .776$) was found to exceed Cohen's (1988) convention for a medium effect size. This result suggests nonathletes endorse

higher self-reported levels of anxiety than student-athletes. Therefore, the null hypothesis is rejected.

Table 3

Summarized Results of Hypotheses 1 and 2

Variable	<i>M</i>	<i>SD</i>	<i>t</i> (192)	<i>p</i>	Cohen's <i>d</i>
Depression			4.61	<.001	.598
Nonathlete	1.91	1.01			
Varsity	1.30	1.00			
Anxiety			5.407	<.001	.776
Nonathlete	2.04	.00			
Varsity	1.25	1.03			

H3:

Mean ratings of depression will be statistically significantly different between female student-athletes and male student-athletes. There were 59 women and 39 men. Mean female DEP scores were 1.51 ± 1.03 and male DEP scores were $.95 \pm .84$. There was homogeneity of variances for depression scores for both women and men, assessed by Levene's test for equality of variances ($p = .088$). Female DEP scores were .56, 95% CI [.16 to .96] higher than male DEP scores. There was a statistically significant difference in mean DEP scores between women and men $t(94) = 2.771, p = .007$. The effect size for this analysis ($d = .581$) was found to exceed Cohen's (1988) convention for a medium effect size. Therefore, the null hypothesis is rejected.

H4:

Mean ratings of anxiety will be statistically significantly different between female student-athletes and their male student-athlete peers. There were 59 women and 39 men. Homogeneity of variances for anxiety scores for women and men groups, assessed by Levene's test for equality of variances ($p = .029$) was violated. Due to this assumption being violated, it was decided that a Welch *t*-test would be used for analysis. A Welch *t*-test was used to help

account for unequal sample sizes and variances. Mean female GAD scores were 1.58 ± 1.03 and male GAD scores were $.70 \pm .80$. Female GAD scores were .86, 95% CI [.49 to 1.24] higher than male GAD scores. There was a statistically significant difference in mean GAD scores between women and men $t(89.799) = 4.60, p < .001$. The effect size for this analysis ($d = .951$) was found to exceed Cohen's (1988) convention for a large effect size. Therefore, the null hypothesis is rejected.

Table 4

Summarized Results of Hypothesis 3 and 4

Variable	<i>M</i>	<i>SD</i>	<i>t</i> (87.68992)	<i>p</i>	Cohen's <i>d</i>
Depression			2.904	.007	.581
Male	.953	1.03			
Female	1.51	.841			
Anxiety			4.604	<.001	.951
Male	.709	.800			
Female	1.58	1.03			

Prior to the next statistical analysis, we first assessed whether the data were normally distributed. The results yielded slight deviation from normality. The data presents with some violation of normality, $p < .05$ (female freshman $p = .005$ and male freshman $p = .011$). Despite small cell sizes, these numbers are reported for further clarification on the violation of normality. No other categories violated the assumption of normality $p > .05$ (female sophomore $p = .276$, junior $p = .460$ and seniors $p = .330$ and male sophomore $p = .060$, juniors $p = .190$ and seniors $p = .174$). Normal Q-Q plots were inspected, and there were only minor deviations from normality. Given the robust nature of ANOVA and large sample size ($n = 97$) the statistical analysis was performed (Laerd Statistics, n.d.). The test of normality also yielded two outliers, one found in the sophomore female depression scores and one in the male senior depression scores. The

analysis was conducted including the outliers and then without the outliers and it was found that there was no significant difference in reported scores of the analysis with the outliers and analysis without the outliers. Therefore, the outliers were not removed from the final analysis.

H5:

Among student-athletes, there will be a significant difference in mean depression scores between individuals in different academic status categories and their reported gender identity. The overall model was not found to be significant $p = .170$. There was no statistically significant interaction between gender and academic status for depression $F(3) = .295, p = .829, \eta^2 = .010$. The main effect for academic status was non-significant, $F(3, 88) = .678, p = .829, \eta^2 = .023$. However, the main effect for gender was statistically significant $F(1,88) = 5.96, p = .017$, partial $\eta^2 = .063$, which is consistent with hypothesis three above, that found a statistically significant difference in depression scores between male student-athletes and female student-athletes. Given that the overall model and interaction effect were not statistically significant, we failed to reject the null hypothesis. However, the significant effect of gender within the model does suggest the need for further exploration of the role of gender on reported depression among student-athletes.

Prior to the next statistical analysis, we first assessed whether the data were normally distributed. The results yielded a slight deviation from normality $p < .05$ (sophomore female = .042; junior female = .039; senior female < .01; freshman male < .01). Despite small cell sizes, these numbers are reported for further clarification on the violation of normality. No other categories violated the normality assumption $p > .05$ (freshman female = .345; sophomore male = .252; junior male = .548 and senior male = .554; female sophomore = .276, female junior .460 and female seniors = .330). Normal Q-Q plots were inspected, and there were only minor deviations from normality. Given the robust nature of ANOVA and large sample size ($n = 97$)

the statistical analysis was performed (Laerd Statistics, n.d.). The test of normality also yielded five outliers, one in freshman female, two in sophomore female, and two in senior female. The analysis was conducted with and without the outliers and revealed that there was no significant difference in reported scores. Therefore, no outliers were removed from the final analysis.

H6:

Among student-athletes, there will be a significant difference in mean anxiety scores between individuals in different academic status categories and gender. The overall model was found to be significant $p < .001$. There was no statistically significant interaction between gender and academic status for anxiety scores $F(3) = .391, p = .760, \eta^2 = .013$. There was a statistically significant main effect for academic status $F(3, 88) = 5.310, p = .002, \eta^2 = .153$. The main effect for gender was statistically significant $F(1,88) = 18.928, p = < .001$, partial $\eta^2 = .177$, which is consistent with hypothesis four above, which found a statistically significant difference between male student-athlete and female student-athlete anxiety scores. Because the interaction effect was not statistically significant, we failed to reject the null hypothesis. However, as the main effect were significant, we should continue to explore the impact of academic status and gender on reported anxiety among student-athletes, although no interaction between two independent variables was found in this sample.

Given the statistically significant main effect for academic status, a Tukey's HSD post-hoc analysis was conducted to assess where the differences occurred within the group. There was a statistically significant difference between freshman and senior student-athletes' mean anxiety scores. Senior student-athletes reported a mean anxiety score of 1.794 (95% CI, 1.373 to 2.215) points higher than freshman student-athletes, a statistically significant difference, $p = .007$.

Table 5

Means and Standard Deviations of Depression and Anxiety Scores Between Gender and Academic Status

Measures	Freshman			Sophomore			Junior			Senior		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
Depression												
Male	.811	.724	17	1.13	1.22	7	1.13	.788	4	1.00	.834	9
Female	1.38	1.00	29	1.35	1.12	11	1.77	1.09	10	1.88	1.03	9
Anxiety												
Male	.457	.641	17	.429	.310	7	1.19	1.10	4	1.19	.980	9
Female	1.27	.844	29	1.52	1.09	11	1.79	1.15	10	2.40	1.07	9

Table 6

Two-Way Analysis of Variance of Depression Scores Between Gender and Academic Status

Measures	Depression				
	<i>F</i>	<i>SS</i>	<i>MS</i>	<i>p</i>	η^2
Gender	$F(1,88) = 5.96$	5.76	5.76	.017	.063
Academic status	$F(3,88) = .678$	1.953	.651	.829	.023
Interaction	$F(3) = .295$	.851	.284	.829	.010

Table 7

Two-Way Analysis of Variance of Anxiety Scores Between Gender and Academic Status

Measures	Anxiety				
	<i>F</i>	<i>SS</i>	<i>MS</i>	<i>p</i>	η^2
Gender	$F(1,88) = 18.92$	15.3	15.3	<.01*	.177
Academic status	$F(3,88) = 5.310$	12.876	4.292	<.01*	.153
Interaction	$F(3) = .391$	.948	.316	.760	.013

The results of the analyses will be addressed next in the discussion chapter.

CHAPTER FOUR: DISCUSSION

Summary of Findings

The purpose of this study was to determine if there were differences in endorsed levels of anxiety and depression (as measured by the Counseling Center Assessment of Psychological Symptoms (CCAPS-62) scores) between nonathlete students and their varsity student-athlete peers (as measured by the Standardized Data Set (SDS)). An additional purpose was to better understand endorsed levels of anxiety and depression between male and female varsity student-athletes across academic standing (i.e., Freshman, Sophomore, Junior, and Senior). To my knowledge, this is the first study to utilize a clinical population when comparing levels of both depression and anxiety between nonathletes and student-athletes.

The dependent variables in this study were measured by the Counseling Center Assessment of Psychological Symptoms (CCAPS-62) instrument, a self-report symptom rating scale that is used by university counseling centers (UCC) throughout the US. The UCC in the Mid-Atlantic region that provided the data for this study used the CCAPS-62 for unique client files (i.e., someone presenting to the UCC for the first time) or for clients who had not presented in over a year. It yields eight different symptom outcome scales, but for purposes of this study, only the depression and anxiety scales were analyzed. The independent variables in this study were nonathletes and varsity student-athletes, gender, and academic status. This information was derived from the Standardized Data Set (SDS). From these measures, six hypotheses were generated to examine the relationships among these client samples.

Hypotheses

The first hypothesis predicted that there would be a statistically significant difference between nonathlete and student-athlete depression scores. The results yielded a statistically

significant difference with a medium effect size (Cohen, 1988). This is consistent with previous literature that found higher levels of reported depressive symptoms by nonathlete students when compared to their student-athlete peers using non-clinical samples (Armstrong & Oomen-Early, 2009; Davoren & Hwang, 2014; Proctor & Benzo, 2010).

The second hypothesis predicted that there would be a statistically significant difference between nonathlete and student-athlete anxiety scores. The results yielded a large effect size (Cohen, 1988). This is also consistent with previous literature that found higher levels of reported anxiety symptoms by nonathlete students when compared to their student-athlete peers among non-clinical samples (Armstrong & Oomen-Early, 2009; Davoren & Hwang, 2014; Proctor & Benzo, 2010; Watson & Kissinger, 2007;).

It should be noted that these results are counter to those reported by other researchers. For example, Parham (1993) drew conclusions that mental health in student-athletes would need to be addressed given the “special challenges” student-athletes endure (p. 411). Hinkle (1994) and Murray (1997) further supported the notion that mental health concerns in student-athletes are greater than nonathlete peers. Yang et al. (2007) found no difference between student-athletes and nonathletes in endorsed levels of mental health concerns. More recent research articles, however, have found that nonathletes endorsed higher levels of mental health concerns than their nonathlete peers (Armstrong & Oomen-Early, 2009; Davoren & Hwang, 2014; Proctor & Benzo, 2010; Watson & Kissinger, 2007;). The results of this study contribute to existing literature that found greater levels of reported anxiety and depression amongst nonathletes when compared to their varsity student-athlete peers, which was contrary to expectations of this study. Given that the sample was a clinical population, it was expected that levels of depression and anxiety would already be increased, as each participant was presenting to a university counseling center.

Contextually, this finding may be explained by the clinical population and should be further explored with populations that are not solely clinical in nature.

Given the literature regarding varsity student-athletes' endorsement of stress, time management, and other identities intersecting with their athletic identity (Kimball & Freysinger, 2003; Storch et al., 2005; Weigand et al., 2013; Wilson & Pritchard, 2005), it was expected that varsity student-athletes would endorse higher levels of anxiety and depression. This is consistent with some of the existing literature (Hinkle, 1994; Murray, 1997; Parham, 1993); however other factors need to be considered as well. Sharpe (2014) suggested that student-athletes may downplay the level of severity in their presentation given the *tough it out* attitude that exists in athletic culture. Even though student-athletes tend to favorably endorse mental health services on campus (Moreland et al., 2017), they are less likely to seek out those services compared to their nonathlete peers. Storch et al. (2005) noted that student-athletes greatly underutilize mental health services on campus.

While the above results are consistent with previous findings (Davoren & Hwang 2014), they must be understood through the lens of athletic culture. Given this information, additional studies with a larger sample size across multiple universities would further help understand and generalize these results. The best way to help reduce stigmatization of endorsing mental health concerns is to allow for anonymous reporting. For example, a link sent to student-athletes' phones so they can complete the survey from anywhere would help with stigmatization. A caveat would be necessary following the study that suggests if a student-athlete were to endorse anxiety or depressive symptoms passed a certain threshold, they would be prompted to seek out additional support through the counseling center. To do this, researchers would identify a cut-off number on the GAD and DEP scales that would trigger this message to student-athletes that

elevate above a certain scaled number. This is just one creative way to help reach more student-athletes and reduce any concerns related to stigmatization of accurate reporting.

The third and fourth hypotheses predicted that there would be a statistically significant difference between male and female varsity student-athletes' endorsed levels of depression and anxiety. Both analyses yielded similar findings, in that female student-athletes reported higher levels of depression (with a medium effect size) (Cohen, 1988), and higher levels of anxiety (with a large effect size) (Cohen, 1988), when compared to their male student-athlete peers. This finding is consistent with previous research and has been well supported in the literature for over ten years (Cox et al., 2017; Davoren & Hwang, 2014; Storch et al., 2005; Trojian, 2016; Yang et al., 2007).

This finding needs to be considered within the context of athletic culture and the stigma among the male population about help-seeking behaviors (Oliver et al., 2005). Oliver et al. (2005) found that women are more likely to report mental health concerns and utilize services for those concerns than males. In this study, women made up 61% of the student-athlete sample. These two results would benefit from a larger sample with more male participants, to further explore the differences between male and female student-athletes' mental health concerns.

The fifth hypothesis stated that among student-athletes, there would be a statistically significant difference in mean depression scores between athletes in different academic status categories and their reported gender. When the overall model was assessed, it was not found to be significant. Hypothesis five did not yield a statistically significant interaction effect between gender and academic status for depression. Thus, it can be concluded that there is no statistically significant difference in mean scores of depression between individuals in different academic status categories and their reported gender. No previous literature was found that has studied the

differences among gender, class status and endorsed rates of depression amongst student-athletes. Further research in this area would benefit clinicians at college counseling centers to provide comprehensive mental health services to student-athletes. For example, if further studies were to find differences in depression scores and class status, college counseling clinicians can be sure to further assess those symptoms when that population presents to the counseling center.

The main effect for gender was statistically significant, which is consistent with previous literature as well as hypothesis three (which assessed for gender differences in student-athlete reporting of depression). Regarding academic status, the main effect for depression was not significant. This finding is inconsistent with previous literature (Yang et al., 2014), which found that freshman student-athletes report significantly higher levels of depression when compared to their senior teammates. While not significantly different, the results of this study found that female seniors endorsed higher levels of depression compared to their junior, sophomore and freshman teammates. In fact, in this study freshmen endorsed the lowest mean rates of depression for both male and female student-athletes, while sophomore males and senior females reported the highest levels.

The sixth hypothesis stated that among student-athletes, there would be a significant difference in mean anxiety scores between athletes in different academic status categories and their reported gender. When the overall model was assessed, it was found not to be significant. The interaction effect was also not significant. The main effects for gender were statistically significant, yielding a difference between male and female student-athletes and their endorsed levels of anxiety. This is consistent with previous literature as well as hypothesis four (which assessed for gender differences in student-athletes' reporting of anxiety). The main effect for academic status was also found to be significant. No previous studies were found that have

focused on endorsed levels of anxiety between varsity student-athletes based on academic status. Previous literature has speculated that upperclassmen engage in student/career exploration and therefore should be less foreclosed within their athletic identity (Lally & Kerr, 2005). They further predicted that this could contribute to less mental health concerns. However, this study found that both senior males and females reported the highest levels of anxiety when compared to their junior, sophomore and freshman teammates. These results need to be considered in the context of this study (i.e., small cell size, limited generalizability), but provide unique preliminary data for future studies. Further exploration regarding differences in endorsed levels of anxiety for student-athletes based on academic status may provide opportunities for preventative programs for those individuals. For example, if further research confirms that senior male and female student-athletes experience greater levels of anxiety than their junior, sophomore and freshman peers, programming can be created to ensure these senior student-athletes' needs are met.

Raalte et al. (2015) evaluated a multimedia web-based support system that positively affected mental health outcomes when tailored to a specific population (i.e., student-athletes). Given student-athletes' busy schedules, and continued stigmatization of mental health related concerns within athletics, web-based support systems can reach more student-athletes to provide mental health support. Raalte et al. (2015) highlighted the SupportforSport.org website in their study and found that "viewing this website significantly increased student-athlete mental health referral efficacy and mental health referral knowledge" (p. 208). This website helps improve mental health awareness and is one example of how providing psychoeducation specific to a target audience (i.e., senior student-athletes) can be helpful to improve mental health and wellbeing. This is just one example of utilizing mental health services with a targeted audience

(i.e., senior student-athletes), that will be beneficial for this population. Bjornsen and Dinkel (2017) noted that additional support within the athletic department, such as mentoring relationships between beginning and advanced student-athletes as well as between current and alumni student-athletes can benefit the mental well-being of current student-athletes. This intervention could be helpful to consider for senior student-athletes given their reported levels of anxiety. When considering that a limited number of student-athletes will go on to play professionally, these results could be consistent with concerns over loss of athletic identity (Heird & Steinfeldt, 2013). Additional research with larger sample sizes from multiple colleges and universities are needed to validate these findings.

Overall, this study attained results that are consistent with existing literature, but also challenged some other researchers' findings. Unique to this study, a main effect for gender and academic status was not found, which challenged Yang et al.'s (2014) findings that freshman student-athletes reported higher levels of depression when compared to their senior teammates. Comparatively, this study found female seniors and male sophomores reported the highest mean depression scores. These results provide a unique finding that warrants further research on the difference between depression scores and academic status.

Given the clinical population of this sample, it is not all together surprising that the results in this study differed from Yang et al.'s (2014) study. Incoming freshman student-athletes are *required* to present to the counseling center for multiple reasons (testing, academic accommodation evaluation, mental health evaluation), therefore likely were more indicative of a non-clinical sample. The senior female student-athletes and sophomore male student-athletes likely presented *voluntarily* and thus more consistent with individuals in distress (i.e., a clinical sample). For that reason, these results need to be taken in context of the clinical sample.

It is also important to note that female student-athletes in almost every previous study endorsed higher levels of mental health concerns when compared to their male student-athlete peers. Given this context, it is not surprising that female senior student-athletes endorsed higher levels of depression compared to male senior student-athletes. Senior student-athletes also begin to engage in career exploration related to identity and identity foreclosure. Erikson (1959) noted that individuals who foreclose on an identity are likely to experience increased levels of distress when that identity undergoes change. Senior female student-athletes are preparing to graduate in transition out of sport, thus are undergoing significant identity exploration.

As for the sophomore student-athlete males, it is possible that the concept of the *sophomore slump* is contributing to the depressive symptoms of student-athletes. Webb and Cotton (2019) characterized the sophomore year as “unique and often overlooked” (p. 188) by university officials and found that there was decline in sophomore student perceptions regarding their classes being enjoyable and meeting their expectations. Overall, sophomore students feel less support from faculty and other campus partners as well as increased pressure to solidify a major and do well in school (Vaughn & Parry, 2013) can contribute to the decline in mental well-being during the sophomore year. Researchers discussed significant oversight and resources given to freshman to help with university retention rates that the adjustment period of college can be considered “skipped” until sophomore year (Webb & Cotton, 2019). Both populations should continue to be researched and explored to further understand the uniqueness of these findings.

No other research could be found that has assessed for differences in anxiety and academic status. This study found unique significant results, that both male and female senior student-athletes endorsed the highest ratings of anxiety. As noted above, this population is likely endorsing significant mental health concerns as the population is a clinical sample and presented

to the center voluntarily. Given the likely transition out of sport and college that follows senior year, it is not surprising that senior male and female student-athletes are experiencing and presenting for heightened levels of anxiety. It is probable that these student-athletes are preparing to embark on life after sport, as well as life after college. Student-athletes are provided with significant structure and routine while pursuing a degree and competing as a division I athlete, thus when the routine is disrupted by something like graduation it is possible to result in increased levels of anxiety. This research provides a unique jumping off point for further researchers to utilize larger samples to assess for differences between academic status and anxiety.

Strengths and Limitations

This study contributes to the literature regarding the mental health and wellbeing of student-athletes, but there are several limitations that must be considered. This study used archival data from the 2018-2019 academic year, which does not allow for control of how the information was gathered. Participants were not able to ask follow-up questions regarding the nature of these measures, nor was I able to interact with the participants to provide such clarity that would allow consistent reporting and assessment. Despite these limitations, CCMH (Locke et al., 2012) has supported the use of these instruments in large data sets.

Given this information and my inability to follow up with participants, 662 data points were removed from the current study for incomplete or inconsistent reporting. In total, this was about 25% of the collected data during the 2018-2019 academic year. Overall, it was not a significant concern for this study given the large sample size and robustness of the analyses. Further research with samples that reflect multiple universities will help with generalizability of these results.

The CCAPS-62 and the SDS are both self-report measures. As noted by Heppner et al. (2008), self-report measures rely on participants' perceptions of their experiences, which may be subject to various biases and influences unique to each individual. It should also be noted that although students are supposed to complete the SDS and CCAPS-62 at the initial intake, sometimes, due to a variety of reasons (i.e., time limitations, faulty technology, etc.), this information may have had to be filled out during subsequent sessions. The SDS would not be affected by this, as the demographics are unlikely to change between sessions. However, it is possible that the ratings of anxiety and depression may have been affected if filled out after the first session. It is possible, too, that after the students received some treatment or support, they could endorse lower rates of depression or anxiety. Given the sample size for this study, it is unlikely that this would have altered the results. For more confidence in future studies, this should be controlled for by only analyzing initial appointment data. Due to the nature of this study, it was not possible to identify data that was filled out in subsequent visits.

A strength of the study is that the CCAPS-62 is a good tool for the measurement of depression and anxiety. The responses are indicative of those individuals who are experiencing anxiety or depressive symptoms as highlighted by the moderately strong correlation between both the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) (Locke et al., 2011).

The archival data used in this study are only from one UCC at a division I institution in the Mid-Atlantic region of the country. This limits the generalizability of the results. The findings are also limited by the sample size of the varsity student-athletes ($n = 97$), which led to small and unequal cell sizes when examining the relationships of gender and academic status on self-reported depression and anxiety symptoms. When testing the assumptions for normality,

some violations were found, which may be due to the small cell sizes in some comparisons. However, due to the robustness of the t -tests and ANOVAs, these violations likely did not affect the results of this study significantly and examinations of the scatter plots did suggest this was likely the case. No other threats to internal and external validity were found.

Another strength of this study is that it is the first research paper to assess for mental health differences between the student-athlete and nonathlete populations within a clinical setting. The study therefore contributes to the existing literature and provides results that are sound due to the use of a robust measure (CCAPS-62) and data analyses.

Implications & Future Directions

Despite the limitations of this study, it adds unique findings to the overall literature regarding the mental health and wellbeing of student-athletes. To my knowledge, it is the first to make use of an archival clinical sample to explore the prevalence of self-reported levels of depression and anxiety. No other study was found that focused on comparing nonathlete students with student-athletes using a clinical sample. This extends to the student-athlete comparisons as well. No other study utilized a clinical sample when analyzing the differences between male and female student-athlete mental well-being and mental well-being between student-athletes and their academic status.

Given that hundreds of UCCs across the country use Titanium as their electronic medical record (EMR) system and make use of the CCAPS-62 and SDS as their intake paperwork, directors of UCCs are encouraged to analyze their data similarly and identify a potentially missed and vulnerable population (i.e., senior female student-athletes). This information may be used to develop preventative programming within the athletic department such as mental health screeners, web-based support that provide additional information about mental health resources

and referral systems and psychoeducation with senior student-athletes to discuss career and transition out of sport. This information will also provide clinicians at the UCC with valuable information regarding their student-athlete clients' mental wellbeing. It should also be noted that student-athletes may be less likely to report or underreport depressive symptoms given the perceived association between mental health struggles and weakness (Carr & Davidson, 2014; Weigand et al., 2013). The more clinical data a UCC has regarding this population, the more clinicians can adequately address potential mental health concerns.

Future studies need to use larger samples and further study the differences in reported levels of anxiety and depression between freshman, sophomore, junior and senior student-athletes. The current study provides unique and interesting preliminary data that will require larger samples and replication at more universities across the country.

This information can be used to better support the treatment planning and outcomes of therapy at UCCs and the athletic department when working with student-athletes. This can be done by disseminating the results of this study within athletic departments to coaches, nutritionists, athletic trainers, etc., to help identify potential "at risk" student-athletes. Therapists working at UCC's should consider setting up a liaisonship with the UCC and athletic department to develop trainings for personnel within the department to identify potential risk factors and symptoms for those student-athletes experiencing mental health concerns. Watson and Kissenger (2007) discussed the importance of communication between the athletic department and counseling center to best support the overall wellness of student-athletes and provide a comprehensive approach to treatment of "adjustment concerns, development challenges and psychosocial stressors" (p. 159).

These results may also prompt therapists for certain questions during an initial appointment. For example, it was found that senior male and female student-athletes reported the highest levels of anxiety. It will be valuable for therapists working with senior student-athletes to inquire about their anxiety levels, given the results of this study. Even if anxiety symptoms have not been outright reported, having this conversation early in the treatment allows for the student-athlete to bring these concerns into the session as needed.

Ongoing conversations around mental health and wellbeing potentially lead to stigma reduction around mental health issues within athletics, potentially leading to a continued decline in issues, and more student-athletes reaching out for help as they need it. For this reason, future research should continue to focus on the mental health needs of student-athletes.

Conclusion

Anxiety and depression are the two most common mental health concerns in the college student population (Xiao et al., 2017). The goal of this study was to distinguish between nonathlete students' and varsity student-athletes' levels of anxiety and depression when presenting to a UCC in the Mid-Atlantic region. It was hypothesized that there would be statistically significant differences between nonathletes and student-athletes as well as between groups of student-athletes (male vs. female; academic level). Results supported differences between nonathletes and varsity student-athletes and revealed greater levels of endorsed depression and anxiety by nonathlete students. Consistent with previous literature, it was found that female student-athletes endorsed higher levels of depression and anxiety when compared to their male peers. It was also found that senior women reported the highest level of anxiety, compared to their freshman teammates. Future research regarding the overall mental health and

wellbeing of varsity student-athletes may improve clinicians' abilities to effectively employ prevention techniques as well as treat student-athletes and their presenting concerns.

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