

A PREDICTIVE CORRELATION STUDY EXAMINING ATTRITION AMONG
NCAA DIII STUDENT-ATHLETES BASED ON
ROSTER GENDER, SPORT-TYPE, AND SPORT-ATTRITION

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

This quantitative, correlational study examined whether gender, sport-type, and sport attrition can predict university attrition of student-athletes from a small, private, NCAA DIII institution. Student-athletes attending DIII institutions are considered a vulnerable population and are largely under-studied. Participation in extra-curricular activities, such as belonging to an athletics team, has been linked to higher rates of social integration on campus and smoother transitions into college life overall. This participation has not been shown to decrease academic performance; however, university attrition of student-athletes remains a problem. This problem is especially relevant in smaller schools, where a small percentage of student attrition can create a sizable change in both revenue and campus climate. Student-athletes from a single institution ($N = 409$) made up the sample, with data being collected through archival data from the university. This study employed a logistic regression to analyze the data and determine the predictive association of gender, sport-type, and sport attrition on university attrition. Future studies should consider qualitative follow-up with student-athletes who have left their institution to determine whether there are more important factors in attrition that should be examined.

Keywords: attrition, retention, student-athletes, NCAA DIII

Dedication

To my daughter, who has already survived a pandemic and a PhD all before her first birthday. May you continue to be strong, brave, smart, and resilient no matter what life throws at you, and may you never lose your joy and laughter.

Acknowledgments

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List of Abbreviations

Academic Progress Rate (APR)

Communities of Practice (CoP)

Division I (DI) – *refers to NCAA athletics*

Division II (DII) – *refers to NCAA athletics*

Division III (DIII) – *refers to NCAA athletics*

First Time in College (FTIC)

Grade Point Average (GPA)

Historically Black Colleges and Universities (HBCU)

Institutional Review Board (IRB)

Lesbian, Gay, Bisexual, and/or Transgender (LGBT)

National Collegiate Athletic Association (NCAA)

Statistical Package for Social Sciences (SPSS) – *software used for analysis*

Variance Inflation Factor (VIF)

CHAPTER ONE: INTRODUCTION

Overview

Student-athletes are a unique subset of the general collegiate population. They face additional demands and stressors compared to the majority of their peers and therefore have an ultimately different college experience. It will be proposed that motivational factors may make a difference in student-athlete attrition. Motivated students, unlike their less motivated peers, may be more willing to put forth the extra time and effort needed for success (Gaston-Gayles, 2005). The background of this study is provided, followed by the problem statement and purpose statement. These, along with a discussion on the significance of the study, will shape this opening chapter. The research question that guided the investigation as well as pertinent definitions conclude this introduction.

Background

Student-athletes tend to have a different experience than that of the “traditional” college student. Increased demands on their time and health, as well as the overall experience they have, can lead to their decision to ultimately persist at an institution (Gansemer-Topf et al., 2014; Rubin & Moses, 2017). This overall experience, including reporting academic success, can be quite variable between the National College Athletic Association (NCAA) divisions (Melendez, 2015). NCAA DIII institutions in particular are not required to report certain critical pieces of information, such as graduation rates, for their student-athletes (Hendricks & Johnson, 2016). This is likely due to one of the most important distinctions between the divisions—DIII institutions may not award scholarships based on athletic ability. Other relevant distinctions will be made as the paper progresses. Because there is no mandated reporting of academic measures at the DIII level, many institutions are left to keep track of student-athletes’ progress

independently or they may simply not have this data at all. Without specific dedication from the athletics department at these institutions, academic data specific to the student-athlete population would not exist.

General student population factors influencing attendance tend to fall into the categories of academic reputation, social climate, cost and location, and influence from friends and family (Goss et al., 2006). For student-athletes, there is a largely influential category missing from that list that often guides their selection process and their likely retention: the athletics department and certain relationships, services, or reputations therein. In comparison to the lack of athlete-specific evidence on selection data, there is more evidence available on what factors are likely to lead to retention for this student-athlete population once they have arrived on their campus of choice. In general, the role of perceived social support seems to be a critical factor in retaining student-athletes. This support must not only come from the inherent nature of the athletics team on which the student participates, but also from relationships with the coach, faculty and staff; the impact of the overall feeling—or “fit”—of the institution is also critical for student-athletes (Gabana et al., 2017; Richards et al., 2016).

Historical Context

The NCAA currently hosts 90 championships annually across 24 sports in their three competitive divisions (NCAA, n.d.). These three divisions were formed in 1973, allowing campuses to align with other like-minded institutions in the areas of philosophy, competition and opportunity (NCAA, n.d.). Aligning based on these areas also gave student-athletes the enhanced ability to select an institution of higher education based on more than just their sport. There are many factors that lead student-athletes to selecting a specific institution, and often these same factors are the ones that determine their persistence or attrition.

When the NCAA first gained popularity in the 1970s, many student-athletes were influenced by the opportunity to play, their coaches, and the athletic program overall (Goss et al., 2006). In more recent years, while these factors certainly remain influential for some, factors with more long-term relevance have become increasingly more important. Klenosky et al. (2001) described student-athletes who chose their institution due to good academic programming, geographic distance from home, and a good sense of belonging or security with the team. These factors, along with the increase in financial concerns nationwide, have forced college and university administrators to transition their roles to view and serve their students as consumers, marketing their own brand against that of distance-education as well as hundreds of other similar physical institutions (Goss et al., 2006). Nowhere is this marketing more important than in the vast, scholarship-free world of DIII athletics.

Division III currently has more student-athletes and more member institutions than either DI or DII (NCAA, n.d.; Schaeperkoetter et al., 2015). The different competitive divisions have different rules in place regarding scholarships, contact hours, recruiting, and more. While student-athletes at all divisional levels must manage the high demands of their sport commitment while maintaining academic progress, their definitions of success and motivations for attaining it are often very different (Hendricks & Johnson, 2016). For example, Antshel et al. (2016) reported that non-scholarship athletes have a much easier time thinking and concentrating than those student-athletes who are on full or even partial scholarships. Schaeperkoetter et al. (2015) also described this, noting that the lack of athletic scholarships at the DIII level is intended to attract those student-athletes who play simply because they love to play and will still place higher priority on their academic pursuits. While that divide is beneficial in theory, many of the student-athletes competing at DIII institutions feel they are just as competitive as their DI

counterparts and place just as high an emphasis on their sport (Schaeperkoetter et al., 2015). Furthermore, Rettig and Hu (2016) found that while both athletes and non-athletes reported similar engagement in academics, those student-athletes who competed in high-profile sports (defined in that study as baseball, basketball, and football) faced additional challenges in achieving their academic goals compared with their low-profile and non-athlete peers.

Finally, it is nearly impossible to separate demographic variables from a conversation on collegiate athletics. Race and gender in particular are at the forefront of nearly every controversy in athletics. Several studies have noted that African-American males participating in revenue or high-profile sports are less likely to academically achieve than both their lower-profile student-athlete and non-athlete peers (Gaston-Gayles, 2005). In addition, one study found that males without scholarships at the DII level exhibited the lowest levels of burnout of the sample studied, while female student-athletes without scholarships instead exhibited the highest levels of burnout (Judge et al., 2012). These differences are noteworthy and may find roots in the grounding theories of this issue.

Theory

Several theories have been used to examine student-athlete decision making in academia, including Tinto's continuously growing model of student dropout, Deci's (1991) theory of self-determination and motivation, and Wenger's (2000) social theory of learning. Tinto's (1975) model of student dropout behavior serves as a critical building block for any research on persistence and attrition in higher education, even outside of athletics. Durkheim's contributions to this model are most telling, describing the influence of demographic, expectational, and motivational attributes of individual students (Tinto, 1975). These attributes will not only include students' pre-entry characteristics, but also the experiences they have once they arrive on

campus. Student affairs professionals must therefore be aware of the impact of relationships and mental health issues on the success of college students (Gansemer-Topf et al., 2014). Those students who may be academically competent but lacking in other social or compensatory skills will face great challenges in navigating their new environment (Gansemer-Topf et al., 2014).

The theory of self-determination and motivation brought forth by Deci et al. (1991) includes intentional distinctions between behaviors motivated by internal, personal forces and those controlled externally. The contextualization of human behavior within this theory allows greater connections to be drawn between actions and asserts that performance is much enhanced in environments where base needs are fulfilled (Deci et al., 1991). Self-motivated persons tend to have greater academic success than their less motivated peers and also tend to be better adjusted; this allows for students to more readily become a part of greater society (Deci et al., 1991), one of the goals of higher education. It is important to allow college students the opportunity for autonomy, providing them with choices about the activities and assignments in which they engage (Deci et al., 1991). Garrett et al. (2020) also found autonomy to be extremely important for students, with a lack of autonomy decreasing the overall motivation and satisfaction for these students. It seems it is equally important to support educators who wish to allow students this opportunity, being sure to emphasize autonomy and outcomes rather than deadlines or competition (Deci et al., 1991).

Of equal importance in consideration of the student-athlete retention problem is the idea of belonging. Etienne Wenger's (2000) social theory of learning contains a central concept she calls communities of practice (CoP). These CoP provide opportunities for students with similar interests to learn together and share resources, enhancing their sense of belonging within the campus community and enhancing their engagement—both of which are critical to persistence

(Wenger, 2000). Participation in activities or groups that foster community outside of the traditional academic setting can help students explore personal interests as well as form social bonds with other students and staff members. Involvement, engagement, and integration are all held as essential theories for student success, and can be accommodated by the same opportunities described by Wenger: time spent collaborating, socializing, interacting with the institution, and sharing attitudes and beliefs (Hendricks & Johnson, 2016). All of these individual attributes are important to consider when discussing academic and athletic motivation in student-athletes.

Summary

Athletic departments and student affairs professionals alike would benefit from the knowledge of specific factors that could decrease attrition of student-athletes, especially on smaller campuses. Specifically, Gaston-Gayles (2005) noted that noncognitive variables, particularly those involving a support system and positive self-concept, were predictive of academic performance. Judge et al. (2012), among others, found that scholarship holders varied in academic achievement based on gender, noting a potential difference in intrinsic motivation between male and female student-athletes. The importance of the overall student experience was also discussed (Gansemer-Topf et al., 2014; Rubin & Moses, 2017). By acknowledging and addressing some of these potential risk factors, it is possible that student-athletes may be provided a better educational experience and be more likely to persist to graduation.

Problem Statement

There is a large emphasis on retention for the traditional undergraduate population on college campuses in the literature, yet there are many unique subsets of the student population who must be considered independently due to their independent needs. Division III student-

athletes in particular are a vulnerable and unprotected group, needing more institutional support than the general student population in many cases (Hendricks & Johnson, 2016); however, limited research on their persistence and attrition exists. Instead, much of the current research focuses largely on Division I institutions. The factors that contribute to student-athlete persistence or attrition from both sport and academia at the Division III level are different than those of student-athletes at other divisions, and this could potentially be due to a difference in institutional support as well as scholarship availability (Antshel et al., 2016; Hendricks & Johnson, 2016). For some institutions at the DIII level, student-athletes comprise over one-third of the incoming classes, meaning that retention of these students is critical to the economic and social well-being of the campus, if not also the surrounding community.

Regarding sport-type and gender, Rettig and Hu (2016) found that low-profile student-athletes—defined in this study as those on teams which do not generate revenue or take substantial time—and non-athlete students did not show any significant differences regarding educational outcomes; by contrast, high-profile student-athletes—men’s and women’s basketball, football, and baseball athletes in this study—demonstrated lower overall satisfaction and lower grades than their peers. These high-profile athletes tend to participate in the sports that are most visible on campus as well as on television, with many of their events generating revenue for the institution; nationwide, these are primarily football and basketball athletes (Rettig & Hu, 2016; Tudor & Ridpath, 2018b; Yukhymenko-Lescroart et al., 2015). Judge et al. (2012) described a difference in burnout based on gender at the DII level. Melendez (2015) and Tudor and Ridpath (2018b) noted that motivation of student-athletes to perform both academically and athletically was significantly impacted by the gender team on which they competed. Female students are often better adjusted academically, while male student-athletes

tend to have lower academic achievement (Antshel et al., 2016; Dougherty & Dougherty, 2018; Melendez, 2015). Based on these findings, both gender and the “profile” level or revenue-status of sport—as well as the impact of those variables on attrition—warrant further investigation.

The problem is that, among the population of NCAA DIII student-athletes, there is very little to suggest why attrition occurs. Specifically, there is insufficient evidence of the combined predictive qualities of gender, sport-type, and sport attrition on university attrition.

Purpose Statement

The purpose of this quantitative, correlational study was to determine the predictive capability of the combination of gender, sport-type, and sport attrition on the university attrition rates of student-athletes attending a single DIII institution. This study utilized archival data to determine attrition among members of this population. The criterion variable was university attrition status, as defined by whether or not the student-athlete was still enrolled at the institution one academic year after entering the institution as a student-athlete (i.e. continuance from year one to year two). Attrition is broadly defined as the discontinuance in enrollment at an institution (Hagedorn, 2005). The combination of predictor variables included: gender, as determined by the sport roster the student-athlete was on (i.e. men’s soccer athlete will be treated as male, women’s hockey athlete as female); sport-type, defined as revenue or non-revenue sports—at the subject institution, this included men’s and women’s basketball, men’s ice hockey, and men’s lacrosse; and sport attrition (i.e. continuance or non-continuance on the chosen sport team from one season to the next).

Significance of the Study

While there is an underwhelming amount of research in the area of DIII varsity athletics and student retention, many researchers have pointed to the importance of extra-curricular

activities for college students. These extra-curricular benefits are especially present among intramural and club sport participants, lending some potential transferability to the desired population of student-athletes. For first time in college (FTIC) students, McElveen and Rossow (2014) found a fall-to-spring retention rate 4.7% higher and fall-to-fall retention rate 5.9% higher among those participating in intramural sports compared to those not participating in intramurals. For smaller institutions, where student-athletes make up a substantial percentage of the overall student population, this can mean the difference of hundreds of thousands of dollars in tuition-based revenue. Participation in a pre-existing campus community, such as an athletics team, can promote a smoother transition for new and transfer students as well as increase their social integration, both of which can decrease rates of voluntary withdrawal (Gansemer-Topf et al., 2014). Athletic training students, who face similar time and resource constraints and commitments as their student-athlete classmates, have also shown that social engagement is critical to their success (Bowman et al., 2015). Even considering all of this, DIII football programs have some of the worst retention rates of any sport program at any division in the country (Dougherty & Dougherty, 2018).

Student-athletes could more greatly benefit from new or better support programs on campus if their struggles were better known, as programs could be tailored to some of these unique needs (Hendricks & Johnson, 2016; Turner, 2016). One example of this is the idea that those student-athletes with higher athletic identity are less likely to utilize academic services when their grades decline compared with those with higher academic identity (Antshel et al., 2016). Administrators should, therefore, not only continue to support existing academic support programs but also work to increase awareness of the individual needs of the student-athlete population (Tudor & Ridpath, 2018b). This knowledge also supports increased staffing in

support service departments in order to adequately meet the motivational requirements of college student-athletes, which should be monitored from both an academic and athletic standpoint (Tudor & Ridpath, 2018b).

If such factors as institutional fit and social integration are indeed the most important in retaining student-athletes, especially on these small campuses, what is the missing piece between their sport participation and their desire to persist to graduation? Dougherty and Dougherty (2018) suggest that poor initial institutional selection may play a role, with those of minority ethnicities or religious affiliations relative to the rest of campus having a harder time assimilating. Even for those students who select an overall “fitting” campus, some found satisfaction-based and achievement differences among student-athletes in different sport types (Judge et al., 2012; Rettig & Hu, 2016). If these and other factors can more thoroughly be explored, identifying why DIII athletes are departing their institutions prior to graduation, perhaps solutions can be drawn.

Research Question

RQ1: How accurately can NCAA DIII student-athlete’s university attrition from a small private institution be predicted from a linear combination of gender, sport-type, and sport attrition?

Definitions

1. *Gender* – Male and female gender may refer to behavioral, cultural, or biological characteristics for a given individual; the binary of male and female may also not be inclusive enough for all persons (Merriam-Webster, 2020). In this study, “gender” as a predictor variable is defined by the sport roster on which the student-athlete is found and was measured nominally.

2. *Sport-Type* – Type of sport can refer to whether the sport is team-based or individual in nature (NCAA, 2019) as well as whether it is revenue or non-revenue based (Adamek, 2017). This predictor variable was measured nominally, reflecting presence on either a revenue or non-revenue sport roster.
3. *Attrition* – Attrition is the discontinuance in enrollment at an institution (Hagedorn, 2005). This criterion variable was measured nominally. Student-athlete’s university attrition is defined as enrollment at the institution one academic year after entering the institution (i.e. continuance vs. non-continuance). An additional facet of attrition—“sport attrition”—was measured as a predictor variable, reflecting student-athlete presence on a sport roster from one sport season to the next, and was also measured nominally (i.e. continuance vs. non-continuance).
4. *Locus of Control* – Locus is the perception of outcomes resulting from one’s own actions (Holden et al., 2019). Internal locus of control facilitates perceived competence and increased intrinsic motivation; external locus of control undermines intrinsic motivation by emphasizing external forces such as luck or other lack of control (Holden et al., 2019).
5. *Retention* – Retention, put simply, is staying in school until completion of a degree (Hagedorn, 2005). Retention rates are based on completion within 150% of “normal time” (i.e. six years for four-year institutions), and the word is often interchanged with *persistence* (Hagedorn, 2005).
6. *Dropout* – Dropout, therefore, is the opposite of retention—leaving school prior to completing a degree (Hagedorn, 2005).

CHAPTER TWO: LITERATURE REVIEW

Overview

A review of the literature was undertaken in order to explore the many factors that may contribute to student-athlete attrition. Specifically, this review prioritized the study of motivational factors among undergraduate student-athletes as well as the impact of many of these factors on retention rates. This chapter will present a review and synthesis of the literature that was discovered; the most current literature related to this topic will be prioritized. First, the study will be framed by the theories of student dropout behavior, self-determination, and social learning. Related literature will be discussed and categorized by major themes and subthemes. These themes are important in understanding the motives of students and student-athletes prior to enrolling at an institution as well as the factors considered most important by both students and researchers in determining critical factors such as academic success, inclusion on campus, motivation, and persistence. Finally, conclusions will be drawn based on the literature; these conclusions will be the basis for establishing the need for this study.

Theoretical Framework

Student Dropout Behavior

Vincent Tinto's (1975) primary objective in writing a synthesis on student dropout was to formulate a model that could explain the differences in dropout types. Although there was already a substantial amount of research on the topic at the time, Tinto (1975) noted that many researchers "lump[ed] together" several unrelated types of dropout, incorrectly leaving voluntary and involuntary dropout to be evaluated simultaneously (p. 89). In order to better differentiate these types of dropout behavior, Tinto (1975) combined social psychology models of suicide as well as educational economics notions of cost-benefit analysis and investment. This

differentiation, focusing on forced withdrawal compared to voluntary departure, proved to be very important as research continued to evolve.

Tinto (1975), with the help of Spady's (1970) and Durkheim's (1961) contributions, notes that students attending higher education institutions have both academic and social domains to consider. Because of this, as students begin to integrate into the campus community, it seemed logical that some students may excel in integration in one domain without involving themselves in the other (Tinto, 1975). Application of existing theories suggested that there would be a reciprocal relationship between these domains wherein emphasis on social integration would detract from academic success, and vice versa (Tinto, 1975). Tinto (1975) did not feel these two domains were enough of a delineation, instead suggesting that individual characteristics and motivations must also be considered when investigating institutional persistence. These additional delineations still serve as the starting point in nearly all research on attrition.

In summary, Tinto's (1975) dropout theory is this: dropout can and should be viewed from a longitudinal perspective, whereby a complex set of interactions and experiences continually alter the student's motivations and commitments, thereby leading to either persistence or dropout. More specifically, Tinto (1975) suggests that the combination of family background, individual attributes, and pre-college characteristics influence student commitment; in turn, these commitments influence academic achievement and social interactions with both peers and faculty. All of these interactions ultimately lead to either academic integration, social integration, neither, or both, which will impact the student's level of commitment to the institution, ultimately leading to a potential dropout decision (Tinto, 1975). It is important to consider the limitations of that approach; namely, there are many factors external to the college atmosphere that may also influence the decision to persist or dropout (Tinto, 1975). Also

paramount to a true understanding of the model is that individuals may perceive a similar situation in different ways, limiting some of the generalizability of these situations (Tinto, 1975). Incorporating these complex interactions and focusing on individual characteristics will serve to better frame the potential motivation of student-athletes as they make decisions regarding persistence.

Self-Determination and Motivation

Schools represent a large majority of the primary socialization influences for people and, in turn, society (Deci et al., 1991). Unlike many other behavioral regulation theories, this theory of self-determination includes an intentional distinction between those behaviors that are motivated by some internal, or personal, force and those that are controlled by some other, external force; self-determined behavior is a choice that is made (Deci et al., 1991). Self-determination theory also prioritizes innate needs—competence, relatedness, and autonomy—giving more information about the *why* of certain human behaviors (Deci et al., 1991). These needs contextualize human behavior and make it easier to relate seemingly unconnected phenomena and observe conditions that may facilitate motivation, performance, and development (Deci et al., 1991). The theory here asserts that constructs like motivation and performance will be maximized in environments where basic psychological needs have the opportunity to be fulfilled.

Behaviors are generally categorized into intrinsically and extrinsically motivated actions. Intrinsically motivated behaviors are satisfying or pleasurable for their own sake and are generally interesting to the person engaging in them; extrinsically motivated behaviors are instead performed to fulfill some other outside construct (Deci et al., 1991). Self-motivated behaviors can be intrinsic or extrinsic but tend to fall under intrinsic motives more frequently;

those exhibiting these self-motivating behaviors tend to stay in school longer, have greater academic success, and be better adjusted both in and out of the education setting (Deci et al., 1991). Interestingly, an emphasis on self-motivated behaviors and intrinsic motivators can also increase traits seen as valuable in society such as creativity, initiative, and curiosity (Deci et al., 1991).

Increasing motivation for students may be influenced greatly by the use of rewards, punishments, or other external factors (Deci et al., 1991). These events—such as emphasized examination periods, severe written or oral feedback, deadlines, or competition—tend to exert pressure on students to think, feel, or behave in a specific way; thinking quickly and feeling controlled in this way diminishes the autonomy of the individual or student, thereby decreasing self-motivation (Deci et al., 1991). For the collegiate population specifically, students thrive with the ability to make choices about the activities in which they engage (Deci et al., 1991). Educators who are autonomy supportive produce students who are more intrinsically motivated, competent, and have higher self-esteem (Deci et al., 1991). These students tend to have increased achievement (Deci et al., 1991). Unfortunately, many educators may feel they cannot teach in this autonomy supportive way due to pressure from administrators and even the students themselves to perform at a given standard—devaluing the self-determination of the teacher may cause them to be more controlling, which, in turn, negatively impacts the students (Deci et al., 1991).

Communities of Practice and Social Learning

Etienne Wenger (2000) posited that competence is a social and historical construct. Since displaying competence in a given field is most often how we communicate knowledge, *knowing* is conceivably a social construct itself (Wenger, 2000). Given two typical examples of social

engagement, Wenger (2000) tries to describe this social construct: an individual might be the newest member of a group, feeling inadequate among the more knowledgeable, established, or senior members; conversely, one might be the most senior member of a group with established expertise and credibility, who is now forced out of a comfort zone into a new situation and must prove their own competence among this new population. This perceived discomfort is proof of the importance of the feeling of belonging to a social group (Wenger, 2000). College students matriculate into a new institution with both of these engagement patterns; they have at once left their communities and high schools, which likely served as a source of comfort and encouragement, and now also enter a new environment where they are likely to feel inadequate in many ways (Wenger, 2000).

There are three modes of belonging in Wenger's (2000) social learning theory: engagement with the world and with each other; imagination or construction of an image of ourselves, our communities, and the world; and alignment of activities in our lives. These three modes contribute to the formation of social learning systems, or communities, as well as to personal identity formation. Communities of Practice (CoP) have existed since the beginning of human existence; participation in a community is quite literally the core of what makes human beings capable of meaningful knowledge (Wenger, 2000). These communities are the "building blocks" of social learning systems (Wenger, 2000, p. 229). On a college campus, there are few more established and pervasive communities than that of an athletics department and of each individual sport team.

In applying Wenger's social theory of learning, Masika and Jones (2016) noted that there is a need for active participation from participants. Wenger (2000) suggests that three elements must combine to be a successful community member: *joint enterprise*, or the ability to contribute

to the group; *mutuality*, or the interaction of group members focused on mutual engagement; and *shared repertoire*, or the production of communal resources and the ability to use them properly. Students who participate in group activities utilizing these elements tend to have a higher sense of belonging to the organization or group of which they are a member (Masika & Jones, 2016). This sense of belonging can increase confidence for an individual, leading them to potentially take a more active role in the group in the future (Masika & Jones, 2016). Finding a community to which a student or student-athlete feels welcome can prove paramount to their success in higher education.

Related Literature

In many areas, but especially in the realm of higher education, motivation is most often associated with successful outcomes. For student-athletes, this motivation must come from a variety of sources and be reflected in multiple ways in order to maintain success in the duality of academic and athletic achievement. It seems that factors outside the athlete's control—or at least those they perceive to be outside of their control—are the most likely influences on athletes' decisions to persist or not (Richards et al., 2017). Some have even suggested that the transitional nature of beginning college coupled with the unique experience that student-athletes have at school may lead them to transfer or dropout more frequently than their non-athlete student peers (Parker et al., 2016). This may be exemplified best by the finding that for student-athletes, the dimension of physical health or exercise was found to be higher, or more important, than that of their non-athlete peers, while dimensions of general wellness—mental, spiritual, social, and intellectual—were all found to be lower, or less important, among student-athletes than among their non-athlete peers (Mayol et al., 2017).

Athletes tend to be motivated toward personal growth in their sport, which is inextricably associated with personal success (Tudor & Ridpath, 2018a). This success could potentially be amplified even further through an increased growth mindset, transferring to both academic and athletic achievement (Nichols et al., 2019). Beyond this relationship between achievement and motivation, the overall student experience seems to play a large role in students' decisions to drop out of an institution or be retained (Gansemer-Topf et al., 2014). Student-athletes face all of the same transitional hardships and other risks as their non-athlete peers but additionally face challenging time commitments and added stressors related to their sport participation (Mayol et al., 2017). For student-athletes, this overall experience can be quite different than that of the “traditional” college student; increased demands on their health and their time lead to a unique collegiate experience (Rubin & Moses, 2017).

Student-athletes love to compete, even off the field. This competition is especially valuable in academics, where they can challenge each other to keep improving and hold each other accountable (Rubin & Moses, 2017). However, the impact of athletic identity can sometimes dissuade student-athletes from choosing more rigorous majors of study (Foster & Huml, 2017). While the literature will show that there are many important influences that impact the student-athlete decision to persist at a given institution—from initially selecting the right school through relationship building, mindset, and uncontrollable demographic differences—there are also many gaps left to be filled on these topics.

School Selection

Family influences. Student-athletes, similar to the general student body, come from a wide variety of family backgrounds. These variations can be a significant factor in determining the ultimate selection of an institution of higher education, including if the student will attend at

all (Schaeperkoetter et al., 2015; Vogel et al., 2019). Family factors such as listening intently and helping narrow down student options were noted as critically important in the selection process (Schaeperkoetter et al., 2015). Furthermore, norms in the family regarding college attendance history and overall cost were discussed (Schaeperkoetter et al., 2015). Rhee et al. (2018) also found some participants who described the influence of family and friends who attended one of their potential colleges as a factor in their selection process; they deemed this factor *familiarity*. For some recruits, the simple fact of geographic proximity to their home town or other family members may be a significant enough factor to influence school selection (Andrew et al., 2016; Magnusen et al., 2017).

Recruiting. From the perspective of an institution, recruiting can make great financial and success-based impacts on a program (Magnusen et al., 2017); for student-athletes this institutional selection must be taken seriously, as it will impact their academic and athletic development for years. The recruiting process is full of inconsistencies, most of which universities should reflect on and address (Hextrum, 2018). For example, during the recruiting process, coaches tend to emphasize the importance of academics on campus and the availability of specific success-based resources that would be available to the incoming student-athlete; these conversations are largely geared toward the parent and guardian audience (Rubin & Moses, 2017). Pre-visit interactions and conversations such as this may even lead to inquiry about the student-athletes potential field of study so that they may meet with faculty from that department during their official visit or even sit in on classes (Lim et al., 2017). These academic factors were ranked among the most important factors by DIII student-athletes in particular, which contradicts much of the research surrounding other varsity athletics (Nichols et al., 2020).

On the other hand, interactions with potential student-athletes both from the coach and the current student-athletes tend to be much more athletics-based (Lim et al., 2017). These interactions tend to be extremely personal and may be quite frequent during the recruiting process (Garrett et al., 2020). Because coaching staff personalities and their associated team cultures can have such a profound impact on the experience for a recruit, they must be cognizant of the types of student-athletes they are recruiting (Lim et al., 2017); likewise, the students must pay attention to the culture of any potential institution and their respective teams. For the student-athletes, sometimes prioritizing athletics in their search for an institution leads to increased contact with institutions, staff, and students as the athletes are more aggressive with potential colleges or teams (Hextrum, 2018). For the coaches, sometimes a relationship with a coach at another level (i.e. high school, two-year colleges, four-year colleges) can help facilitate athletic recruiting for potential student-athletes (Hextrum, 2018). In general, the current head coach is a prominent influence in college selection for prospective student-athletes (Andrew et al., 2016).

During this socialization and selection process, there are some behaviors and demographic characteristics that are more favorable to institutions; these preferences can lead to student-athletes from certain backgrounds being less favorably viewed (Hextrum, 2018). Whether unconsciously or intentionally, preference in recruiting is often given to those who live in white, middle-class neighborhoods (Hextrum, 2018). Similarly, there are institutional characteristics that may lead to a student-athlete prospect being more likely to attend one institution over another (Magnusen et al., 2017). There is a level of trust necessary for prospective student-athletes to have with the coaches during this selection process, but the coaches' inherent position of power can lead to unintended influence (Garrett et al., 2020). The

reputation of a program or a school—both positive or negative—can impact the likelihood of a recruit attending that institution by between 1% and 14% (Magnusen et al., 2017).

Athletic opportunity. Some students seek out specific institutions in order to participate in a higher level of competition or develop their potential careers (Garrett et al., 2020). In small institutions especially, athletics department expansion allows increased opportunity for students to enroll; this is especially true for male students as well as for students who may be under-achievers academically (Beron & Piquero, 2016; Dougherty & Dougherty, 2018). Even for students who may not compete at the NCAA level, the influence of successful athletics departments can be seen in increased retention rates (Hickman & Meyer, 2017). For DIII student-athletes, athletic opportunity is ranked comparatively lower in importance than academic and social factors (Nichols et al., 2020).

These opportunities to compete athletically often become one of the primary motivators for student-athletes to persist at an institution; in some cases, it is the only reason the student is on campus at all (Beron & Piquero, 2016; Garrett et al., 2020; Lim et al., 2017; McElveen & Ibele, 2019; Richards et al., 2016; Vogel et al., 2019). There are even some institutions who will relax their admission standards in order to accommodate those students who are primarily attending due to athletic merit (Beron & Piquero, 2016; Brecht & Burnett, 2019; Castle et al., 2015; Hendricks & Johnson, 2016; Huml et al., 2019; Vogel et al., 2019). These athletic influences indicate that universities should identify those student-athletes who do not continue participation on their sport-team, as they are likely at a higher risk of departing the institution (McElveen & Ibele, 2019).

Living conditions. Living arrangements can contribute to differences in academic performance (Rubin & Moses, 2017; Scott & Castles, 2017). Students living on-campus at

HBCU's, for example, have been shown to be more likely to be retained year-to-year, are more likely to persist to graduation, and participated more on campus in general (Scott & Castles, 2017). Community college students with on-campus housing are more likely to transfer to a four-year institution and are more likely to complete their bachelor's degrees (Turk & Gonzalez Canche, 2018). These on-campus housing opportunities promote social integration, which can lead to increased persistence (Gabana et al., 2017; Turk & Gonzalez Canche, 2018). Additionally, many student-athletes tend to live together, whether on or off campus; this constant interaction can reinforce the suppression of individual identities and encourage the team mentality—for better or worse (Rubin & Moses, 2017).

Satisfaction. It has been reported that student-athletes may face generally lower satisfaction than their non-athlete peers due to role conflict (Mayol et al., 2017); this is especially true for more highly visible, or revenue-generating, teams compared with student-athletes on other teams (Yukhymenko-Lescroart et al., 2015). However, for students in general, athletics participation, whether as an athlete or a fan, does tend to lead to increased retention rates (Dougherty & Dougherty, 2018; Hickman & Meyer, 2017). Gabana et al. (2017) found that satisfaction with both school selection and athletic participation was related negatively with burnout measures and positively with measures indicating social support, indicating a decrease in burnout for student-athletes who are satisfied at their institutions. This may be due in part to a greater number of student-athletes living on campus, as on-campus living has been shown to increase satisfaction with the overall college experience (Scott & Castles, 2017). Wilkins et al. (2016) also note that organizational identification measures were able to predict satisfaction, although social identification measures were not able to predict this, identifying a need for feelings of belonging within the overall university context. Although it seems accepted that

satisfaction is critically important to academic success, these findings lend conflicting support to the idea that student-athletes may be at a predisposed disadvantage in this area.

Support Services

One of the primary issues discussed when considering attrition from higher education institutions is the challenge with transitioning to college. Homesickness, isolation, and an increase in mental health issue incidence are all potential causes of early attrition from a student's chosen institution (Gansemer-Topf et al., 2014). While there are some positives, including access to crisis response type resources (Sterett et al., 2018), there is certainly room for improvement on many campuses. Some complaints from interviewed students have specifically focused on a lack of timely and easy accessibility to the services they need as well as a potential lack of the resources altogether (Gansemer-Topf et al., 2014; Richards et al., 2016). Others, unfortunately, have pointed not to a lack of availability but instead a lack of quality of the resources or services that do exist (Rubin & Moses, 2017). As mental health continues to be in the forefront of educational consideration, institutions must consider enhancing their offerings for all students.

Advising. Many student-athletes arrive on campus unprepared for academic success, having focused so whole-heartedly on their athletic endeavors in the past (Rubin & Moses, 2017). Because of this, institutions with larger financial resources tend to have a large academic support teams available that are specifically dedicated to student-athlete success (Gaston Gayles et al., 2015; Rubin & Moses, 2017). There are many advantages to this availability, including the possibility to mitigate disadvantageous precollege characteristics or demographics and influence academic major selections (Brecht & Burnett, 2019; Foster & Huml, 2017) as well as the ability to increase academic performance overall (Rankin et al., 2016). One unintended consequence of

academic advisors working with student-athletes is that of clustering. By placing multiple teammates in the same courses or majors, a cohort effect is produced and encourages the student-athletes' natural tendencies to compete with and help each other (Rubin & Moses, 2017).

However, these clusters can also be perceived negatively by the broader campus community, especially when related to African-American athletes and those participating on revenue sport teams (Huml et al., 2019).

Unfortunately, this academic or advisory support team can sometimes over-assist the student-athletes, leading them to be less self-sufficient and depriving their development of important decision-making skills in the process (Rubin & Moses, 2017). At larger institutions, especially at the NCAA DI level, some support services may encourage a strong athletic identity, eroding the academic identity, by taking decisions such as course selection or major selection out of the hands of the student-athletes (Huml et al., 2019). For non-DI institutions, it may be more challenging to encourage interaction with advising staffs, but the impact of these interactions has been proven salient across all three divisions (Rankin et al., 2016).

Faculty support. Interaction with faculty members in general as well as staff members within the athletic department has had a positive influence on academic success as well as overall academic motivation for student athletes (Rankin et al., 2016; Rubin & Moses, 2017; Trolian et al., 2016). This interaction may yield the largest “pay-off” in terms of influencing change among DIII student-athletes, as long as these interactions are high quality and within the proper context (Rankin et al., 2016). These interactions can—and should—include understanding and compassion regarding the student-athlete schedule (Sterett et al., 2018). Supportive and caring behavior in general from faculty contributes to a more positive student experience and increases their social assurance (Mueller, 2017). It has also been found that encouraging

mentorship and partnership with faculty encourages focused insight from the student-athletes and improves their overall experience (Sterett et al., 2018; Trolan et al., 2016).

In some cases, however, student-athletes feel as though they are perceived negatively by teaching faculty, in which cases interaction with the faculty members would likely not yield the same positive influence on academic success (Rankin et al., 2016; Rubin & Moses, 2017; Trolan et al., 2016). There are reported issues in which faculty members may place higher expectations on student-athletes compared to non-athlete students; some student-athletes also perceive that they are graded unfairly (Tucker et al., 2016). Sometimes issues with faculty stem from attendance-based concerns when teams are traveling for competition (Sterett et al., 2018). Students who perceive their instructors to be frustrating will have weaker relationships with these staff members, potentially eliminating the potential for achievement increases from general faculty contact (Mueller, 2017).

Coaches' roles in student support. The way that student-athletes perceive their coach is an essential factor in whether students feel supported; it also greatly impacts their potential for development overall (Garrett et al., 2020). One of the primary reported factors for decisions to drop out or persist was that of coaching style, allowing coaches the opportunity to potentially address their own actions in order to better develop the student-athletes (Richards et al., 2016). Student-athletes who feel that their coach is leading ethically and is not abusive report higher satisfaction with their school choice (Yukhymenko-Lescroart et al., 2015). Additionally, say Yukhymenko-Lescroart et al. (2015), this satisfaction can increase feelings of inclusivity on the team. Negative interactions with coaches, however, can lead to both academic and athletic difficulties (Huml et al., 2019; Roxas & Ridinger, 2016). For certain groups, too much interference from the coach in their academics may negatively impact student-athletes' GPAs

(Beron & Piquero, 2016). Conversely, having the support and honesty of the coaching staff from recruitment through graduation is critically important to student-athlete success and can greatly improve team morale (Sterett et al., 2018; Vogel et al., 2019).

Direct communication among coaches and athletes has been associated with athlete motivation (Clancy et al., 2016). This support could come from the head coach, certainly, but also from other coaching staff members, administrative members of the athletic department, or even medical staff and other support staff members (Rankin et al., 2016). All of this interaction with athletic department personnel may not only lead to higher athletic success and athletic identity, but also increased academic success (Hoffman et al., 2016; Rankin et al., 2016). This may be especially true for female student-athletes, reporting that interactions with faculty outside of the classroom positively influences their intellectual growth as well as their growth and success with other interests (Hoffman et al., 2016).

Demographic and Individual Variables

Precollege characteristics. Precollege characteristics incorporate myriad variables; these can include first-generation college status, standardized testing scores, high school achievement, and more. Some researchers have found that these characteristics are not adequate in predicting attrition (Gansemer-Topf et al., 2014; Nichols et al., 2019) while others have argued that these factors are highly predictive on their own (Brecht & Burnett, 2019). While it was historically reported that first-generation status has a negative relationship with retention, Gansemer-Topf et al. (2014) found that at the small, selective, liberal arts institution they studied, this characteristic instead had a positive relationship with retention. Similarly, Brecht & Burnett (2019) noted that high school GPA and standardized test scores were two of the top three factors related to retention in college.

Biological sex. Competing on a men's or women's athletic team has a significant impact on the motivation of student-athletes to perform both academically and athletically (Melendez, 2015; Tudor & Ridpath, 2018a; Tudor & Ridpath, 2018b). Specifically, those participating on women's teams tend to have higher academic motivation while those participating on men's teams tended to have higher athletic motivation (McElveen & Ibele, 2019; Tudor & Ridpath, 2018a). Women also tend to have higher intrinsic motivation than men in general (Clancy et al., 2016). This is exemplified by an idea held by some female student-athletes, feeling that male revenue sport participants tended to lean too much on academic support resources, absolving them of actually doing some of the work (Rubin & Moses, 2017). Female students were also more likely to be better adjusted academically and have more positive attitudes toward their chosen majors, with a relative decrease in male achievement (Antshel et al., 2016; Beron & Piquero, 2016; Dougherty & Dougherty, 2018; Melendez, 2015). It was also found that women student-athletes had greater overall levels of success both in the classroom and on the field, while still having a lower sense of athletic identity (Rankin et al., 2016). This may be related to a lack of gender differences found in stress and coping mechanisms rather than to athletic and academic motivation specifically (Bonneville-Roussy et al, 2017; Holden et al., 2019).

In terms of social climate differences, women's teams have been found to report slightly higher rates of inclusion and attachment to the university (Melendez, 2015; Yukhymenko-Lescroart et al., 2015); they also tend to be more likely to seek out social support when needed (Bonneville-Roussy et al, 2017). This may be due in part to their school selection priorities, placing more emphasis on academics and overall environment than their male student-athlete peers (Andrew et al., 2016). Unfortunately, many female student-athletes also feel as though their contributions to the campus are less valued than that of their male counterparts, both due to

their gender as well as the lower visibility of their sports (Rubin & Moses, 2017). Female student-athletes are more likely to feel a sense of inequality in terms of athletic scholarship opportunities, especially compared to academic scholarships (Tucker et al., 2016). In terms of retention, McElveen and Ibele (2019) found that female student-athletes were retained at a nearly 20% higher rate than their male counterparts. Although this trend of gender differences seems to be consistent, the reasons behind the trend remain unknown.

Sexual and gender identity. In general, many student-athletes find the athletic environment to be somewhat hostile toward LGBT persons (Atteberry-Ash et al., 2017). This can stem from stereotypes about athletes in general, especially those involving specific aesthetics (Fynes & Fisher, 2016); it can also result from a lack of an overall inclusive and equitable campus environment (Garvey, 2020). Peer support is essential for this population, with more supportive climates being more conducive to retention in particular (Garvey, 2020). Students who are exposed to homophobic, transphobic, and sexist language tend to be more supportive of including protections in athletics for their LGBT peers (Atteberry-Ash et al., 2017), which may promote a culture within certain teams where LGBT teammates are more common and therefore more accepted (Fynes & Fisher, 2016). This positive environment can lead to increased performance both on and off the court or field (Fynes & Fisher, 2016).

Unfortunately, not everyone has a welcoming experience regarding their sexual orientation or gender identity; some student-athletes described a lack of support from their coaching staff or even from the athletic department or campus as a whole (Fynes & Fisher, 2016; Garvey, 2020). Instituting protective guidelines for LGBT student-athletes can address widespread negative feelings toward these groups (Atteberry-Ash et al., 2017) and incorporating training for coaching and administrative staff members may help to increase inclusivity and

tolerance on campus (Fynes & Fisher, 2016). Engagement from faculty members among this population can be a critical factor in overall academic success (Garvey, 2020). These guidelines, alongside encouragement to participate for this group of student-athletes, could potentially increase their satisfaction and success in many areas on campus (Atteberry-Ash et al., 2017).

Race and ethnicity. Some previous research called for further investigation into racial or ethnic differences regarding performance and achievement in both athletics and in higher education; these differences seem to be influenced by many more factors than race itself (Antshel et al., 2016; Melendez, 2015; Vogel et al., 2019). Black student-athletes, when compared with their non-athlete peers, may rely on athletics as the primary way to access higher education in general (Scott & Castles, 2017). When compared to their White student-athlete peers, there have been reported lower levels of academic success but no differences in athletic success or athletic identity (Rankin et al., 2016).

In terms of motivation, Black student-athletes may sometimes be socialized through the media and through familial and peer pressure that sports may be their “ticket out” of less favorable circumstances, emphasizing a potential professional career, even at the expense of their academic achievement (Gaston Gayles et al., 2015; Scott & Castles, 2017). However, Black student-athletes may also thrive under more rigorous academic challenges (Woods et al., 2018). Relatedly, it has been found that Black and Hispanic student-athletes may have a higher internalized locus of control than their White student-athlete peers (Watson, 2016). It has also been suggested that student-athletes with a better perception of how a department or team addresses diversity may have a stronger athletic identity (Rankin et al., 2016). These contradictory findings may be related to NCAA Divisional differences or sport-type and therefore require even further investigation.

Divisional affiliation. According to the NCAA (n.d.), DIII institutions make up 40% of the membership. Of these schools, an average of one in six students participates in athletics; at the DI level it is only one in 23 (NCAA, n.d.). Furthermore, DIII maintains a focus on the student's ability to discover themselves, develop into well-rounded adults, and dedicate time to achieving their potential (NCAA, n.d.). NCAA Divisional affiliation impacts the level of competition on campus, shifting the focus from academic achievement to athletic success, and influences many other recruiting factors for the student-athletes (Melendez, 2015). These differences lead to inappropriately drawn conclusions in the literature at times, as they are not generally accounted for outside of the participants section, if at all.

For example, Division II athletes were found to have lower overall satisfaction with their college choice than Division I athletes (Yukhymenko-Lescroart et al., 2015) while scholarship athletes were found to have higher levels of difficulty with concentration than those not on athletic scholarship (Antshel et al., 2016). Division III student-athletes are not permitted to receive athletic scholarships, unlike their DI and DII counterparts, making this comparison among scholarship and non-scholarship athletes relevant and potentially transferable. In contrast, athletic scholarships were found in some cases to have no impact on graduation rates; however, they did positively impact retention short-term (Millea et al., 2018).

Additionally, it has been reported that student-athletes in DIII programs have a lower athletic identity than those in the DI and DII programs, even when differences in overall campus climate were considered (Huml, 2018; Rankin et al., 2016). Those with higher athletic identities or athletic career aspirations also tended to report lower GPAs (Beron & Piquero, 2016). Confoundingly, student-athletes who travel more frequently for their sport reported higher GPAs than those who did not (Beron & Piquero, 2016). Some find it promising that DIII student-

athletes tend to have lower athletic identity, implying that they likely spend more of their time improving academic, career, and other future-oriented identities (Huml, 2018). In the few cases where these divisional differences are addressed, they consistently point to a need for additional investigation.

Sport type. Certain sport teams tend to create an atmosphere of increased pressure on the participants due to the nature of the sport itself. It is commonly held that football and men's and women's basketball are among the most visible, or in some cases, revenue-generating, sports (Rettig & Hu, 2016; Tudor & Ridpath, 2018b; Yukhymenko-Lescroart et al., 2015). The Harris Poll from 2013 (as cited in Tudor & Ridpath, 2018b) noted that college football was not only the most-watched sport in America, but also the favorite; collegiate men's basketball followed closely behind.

Interestingly, research has found conflicting evidence regarding whether sport visibility has a significant impact on either academic or athletic motivation, with some suggesting that there is no difference (Rankin et al., 2016; Tudor and Ridpath, 2018a) and others suggesting that sport type is a key predictive factor in determining academic success and satisfaction (Beron & Piquero, 2016; Rettig & Hu, 2016). In contrast to motivational differences, there is a stronger sense of athletic identity among revenue or "featured" sports participants compared to their non-revenue peers (Rankin et al., 2016); this strength in identity may lead to the downplay of the importance of education (Rubin & Moses, 2017). One explanation offered is that those in more visible sport programs tend to have greater interaction with athletic personnel, which in turn has been shown to contribute to academic and athletic success (Rankin et al., 2016).

Student Engagement

Engaging athletically. Athletic involvement can be a critical social influence for college students, especially those who are first arriving on campus; this influence can help the student-athlete succeed both on and off the field (Antshel et al., 2016; Melendez, 2015). Social adjustment is imperative for the overall persistence of any student, and athletic participation is sometimes linked to more positive social interactions across campus (Gabana et al., 2017; Melendez, 2015; Rettig & Hu, 2016). Interestingly, this seems to hold especially true for non-traditional student-athletes, such as commuters. Because non-athlete students report lower rates of social adjustment than do student-athletes, it can be said that the necessary commitment to shared goals may be a driving factor in this population's engagement (Hendricks & Johnson, 2016; Melendez, 2015; Wenger, 2000).

Yukhymenko-Lescroart et al. (2015) also noted that the feeling of inclusion on an athletics team may impact the way one feels not only about coaching behaviors but about overall college choice satisfaction, both of which are highly influential factors on persistence at the institution. Furthermore, McElveen and Ibele (2019) reported that intramural participants were retained more often than student-athletes or the general population; this may also point to increased satisfaction at lower competitive levels. Finally, even those students who do not participate as a member of an athletics team may be more likely to be retained at institutions with more successful athletics programs, showing the importance of the allocation of resources to these departments (Hickman & Meyer, 2017).

Academic success. It may seem logical to conclude that those student-athletes with lower academic success, often measured by grade point averages (GPA), would be more likely to drop out of school. Gansemer-Topf et al. (2014) did observe this trend, but with the interesting

addition of differentiating between first-year GPA and overall success; first-year GPA predicted first-year retention, while overall GPA predicted four-year graduation rates. Similarly, Millea et al. (2018) noted that increased GPA during freshman year increased the probability of graduation within six years. Furthermore, although students with lower GPAs did tend to leave school more often than those with higher GPAs, there are almost no instances where their departure was due to involuntary academic suspension (Gansemer-Topf et al., 2014). McElveen and Ibele (2019) also noted that DIII student-athletes tended to have lower GPA's and fewer credit hours while in-season compared to out-of-season, but they did not find an overall trend of lower grades or fewer credit hours between student-athletes and the general student population. This theory of maintaining fewer credit hours while in season is supported by Rubin and Moses' (2017) findings regarding a lack of available time for students to access the support services they may need, leading to an increased desire for individualized services.

Another measurement of success in higher education is the likelihood of withdrawal. In athletics, this goes hand-in-hand with eligibility and persistence to graduation. Shell et al. (2016) found that those students who had stronger growth mindsets were less likely to withdraw from certain classes, as were those students who were more motivated by achieving goals. Regarding maintaining eligibility, Rubin and Moses (2017) noted that standards do not necessarily promote or even suggest a route to timely graduation, but rather focus on the outcome of each semester individually. For student-athletes enrolled in DI schools, this is likely due to the Academic Progress Rating (APR), a semester-based approach to measuring individual academic progress (Castle et al., 2015). These APR measures inflict penalties or rewards for programs based on their scores each semester, primarily focused on the number of scholarships allowable per team (Castle et al., 2015). While this APR measure has been highly controversial, some student-

athletes indicated that it was their teammates holding each other accountable—not the coaching staff or the institution at large—that was ensuring their success (Rubin & Moses, 2017). Some university students are highly motivated by future goals, especially those relating to their chosen career fields; this drive toward vocational achievement may also impact overall success and dropout rates (Bonneville-Roussy et al., 2017).

Nichols et al. (2019) found that the only difference between high and low academic performers was the number of academic experiences the students had. Woods et al. (2018) had similar findings among Black student-athletes, who required more academic engagement in order to thrive. These academic experiences can include academic, social, and “everyday” activities: seeking professor feedback, participating in improvement discussions with peers, or simply attending a sponsored event regarding personal development (Nichols et al., 2019). Experiences like these can be profoundly impactful on the integration of student-athletes on campus (Nichols et al., 2019; Rubin & Moses, 2017). One strategy for increasing these experiences is the introduction of a “Student Success Course” or other specific academic training, especially for new students—this type of course has shown to increase academic achievement among other important measures (Kimbark et al., 2017).

Perceived control. In general, locus of control for an individual refers to the amount which that individual attributes a given outcome to either their own internal control or to external forces (Watson, 2016). Student-athletes with low perceived academic control have been found in some cases to benefit from specific types of academic training or coursework (Kimbark et al., 2017; Parker et al., 2016). Student-athletes are sometimes considered at-risk students, and this special academic preparation, such as attributional retraining, can help alleviate some of the academic issues they face (Parker et al., 2016). This attributional retraining allows student-

athletes to ascribe their academic mishaps to factors within their own control, helping to decrease failure overall (Parker et al., 2018). Another way to describe this phenomenon is through the use of positive reframing, where the student-athlete recalls negative situations and intentionally reframes them in a positive light (Garrett et al., 2020). Similarly, those students who maintain a more internalized locus of control tend to experience less stress (Holden et al., 2019; Watson, 2016). Competitive student-athletes in particular tend to have a relatively lower perceived level of control and therefore may be at greater risk for decreased academic success; however, these student-athletes also tend to be the most receptive to interventions such as attributional retraining treatments (Parker et al., 2016). The most striking evidence for the impact of attributional retraining is the finding of the equivalent of a one letter grade increase for students on a post-treatment test (Parker et al., 2018).

Parker et al. (2018) also found that student-athletes who have higher stress find more success after attributional retraining, along with higher levels of positive emotion and lower levels of negative emotion relative to their peers who did not receive attributional retraining. Those students with lower overall stress did not receive the same benefits from attributional retraining (Parker et al., 2018). Similar results are seen with tutoring in general, with tutored students having an increased GPA (Drago et al., 2018). Incoming students with high internal loci of control have an increased chance to be academically successful; those students with low internal loci of control and lower self-assurance could therefore be targeted for intervention to improve their chances of success (Drago et al., 2018).

Social integration. Many personal challenges that plague the college student can often be overcome by establishing a core support group. Social integration can be one of the most highly defining factors in students' consideration of dropping out of school or sport (Gabana et

al., 2017; Tinto, 2017). Gansemer-Topf et al. (2014) reported that some students who did not have a pre-defined group, such as an athletics team, ethnic group, or club membership, were more likely to feel socially isolated and be unable to establish this critically important social support system. However, it is important to note that a feeling of being unwanted in a group would likely have greater negative implications than the potential benefits of group membership in general (Tinto, 2017; Wilkins et al., 2016). For student-athletes, there is an automatic group that exists on campus before they arrive; this availability of social support can not only increase the likelihood of persistence but also decrease the amount of sport-related burnout the student-athlete experiences (Gabana et al., 2017). Many students enjoy the bond that is created by spending so much time together and even mention the advantages of a mentoring relationship with underclassmen and the ability to maintain friendships after their athletic careers ended (Sterett et al, 2018).

In contrast, the possibility was posited that social identification in fact does not predict academic achievement, commitment, or satisfaction (Wilkins et al., 2016). For some student-athletes, the idea of integrating more fully into general campus culture was actually a cause of fear or stress, noting that while trying to study they may become distracted by other students trying to interact with them (Rubin & Moses, 2017). Because of these fears, as well as the bond among athletes who have woken up early together and spent the day accomplishing similar goals, many student-athletes may isolate themselves intentionally, noting that non-athlete students just do not understand their experiences (Rubin & Moses, 2017). Unfortunately, this isolation can contribute to student-athletes feeling like they are missing out on typical college experiences as well as to lower academic achievement (Huml et al., 2019).

Student success courses. The idea of a specific course or program on campus to foster community was also addressed. Several have noted that students in a “Student Success Course” tended to feel more confident and self-efficacious, helping them to stay on their chosen academic paths (Bowering et al., 2017; Kimbark et al., 2017). There was similarly reported an improvement in motivation as well as a decrease in anxiety and procrastination among these students (Bowering et al., 2017). A benefit was also noted involving relationship building with faculty and students and an overall increase in engagement with the campus community (Kimbark et al., 2017).

Some have expanded on this idea specifically for student-athletes, suggesting a “bridge” program or course to be taken during the summer prior to the students’ first year (Huml et al., 2019). Students who are considered at-risk may benefit from a specific strategies-based class through increases in motivation as well as an increased ability to utilize learning and resource management strategies (Wibrowski et al., 2017). Changes such as these can continue to influence the student throughout their four years at college, leading to higher academic achievement (Wibrowski et al., 2017). These success courses can also be designed specifically for the student-athlete experience, allowing them increased opportunities for academic success (Huml et al., 2019).

Conversely, Hatch-Tocaimaza et al. (2019) found that there were minimal changes in students who took a success course, noting that one semester may not be sufficient to learn these critical skills. Unlike Bowering et al. (2017), they also found that these success courses may have a greater impact on out-of-class engagement and campus connections than on study skills or grades (Hatch-Tocaimaza et al., 2019). Brecht and Burnett (2019) take a less formal approach, suggesting that individualized plans, including both one-on-one and group sessions that are

based on the past struggles of each student, should be considered. This individualized need is emphasized by the idea that some students are able to self-register for this type of course, while others are required to participate (Bowering et al., 2017; Hatch-Tocaimaza et al., 2019).

Campus culture. It has been suggested that some variation in findings related to factors like ethnicity, gender, and precollege characteristics may be due to unique, campus-specific features such as institutional policy and an overall supportive culture (Gansemer-Topf et al., 2014; Ishaq & Bass, 2019). This “campus climate”, or the overall attitudes, behaviors, and standards of those on a given campus, have the potential to help or hinder the student experience in important ways (Garrett et al., 2020; Rankin et al., 2016; Wilkins et al., 2016). Establishing a campus culture that values the hard work and time commitment of the student-athletes, rather than condemning them or labeling them as uncommitted to academics, encourages this population to establish themselves as leaders and avoid unsavory behaviors (Ishaq & Bass, 2019; Rubin & Moses, 2017; Yukhymenko-Lescroart et al., 2015). Additionally, this feeling of belonging or “fit” at an institution is a strong predictor of persistence as well as overall success (Brecht & Burnett, 2019; Dougherty & Dougherty, 2018; Rankin et al., 2016; Richards et al., 2016; Tinto, 1975). It may also strongly influence specific success-based outcomes both in athletics and academics (Rankin et al., 2016; Wilkins et al., 2016).

Identity. Athletic identity can be best defined by the amount with which an individual identifies with their role as an athlete (Huml, 2018). Student-athletes tend to have multiple facets of identity; some student-athletes have a higher athletic identity, while others maintain a higher academic identity. Many student-athletes strongly identify with the role of athlete, spending more time developing this identity further and consequently taking longer to develop a strong academic identity (Huml et al., 2019; Watson, 2016). Those students who participate in revenue

sports or expect to become professional athletes also tend to have much higher athletic identity than their non-revenue and non-athlete student peers (Beron & Piquero, 2016; Huml et al., 2019). Many have posited that a strong athletic identity tends to weaken academic identity, leading to potential issues with academic success (Beron & Piquero, 2016; Huml et al., 2019). Unfortunately, this increased identification with the athlete role can also lead to increased stress (Watson, 2016) and decreased overall satisfaction and wellness (Mayol et al., 2017). Some academic issues can be traced to the simple notion that certain student-athletes who spend more time thinking of themselves as athletes than as students will accordingly place more emphasis on athletics than on academic preparation and success (Beron & Piquero, 2016). As discussed previously, for those students who interact frequently with faculty members, athletic identity tends to be lower (Rankin et al., 2016).

Motivation. Collegiate athletes must balance both academics and athletics, but Tudor and Ridpath (2018b) wanted to explore what the motivation to do so could be. In their definition of motivation, Tudor and Ridpath (2018b) focus on the intensity, or amount, of effort and the direction, or the choice to pursue a task at all. While all student-athletes have made the decision to pursue high levels of competition while retaining academic responsibilities, the intensity of effort towards both of these responsibilities can be highly variable. Brecht and Burnett (2019) noted that motivation, especially personal motivation, was predictive of academic success when combined with high school academic achievement and gender. Bowering et al. (2017) observed that increased education about academic skills also increased motivation in academics. More successful teams tend to display greater motivation—both intrinsic and extrinsic—than less successful teams and team members (Clancy et al., 2016). This increased motivation both in academics and athletics may also help with stress reduction and coping skills in university

students, especially when considering future goals and overall affect (Bonneville-Roussy et al, 2017).

Additionally, in predicting academic motivation, Tudor and Ridpath (2018b) noted that the combination of gender, race, and campus climate was a significant predictor; for sport motivation, they found just gender and campus climate to be significant. When the motivational climate was perceived to be focused on success and improvement, student-athlete motivation both academically and athletically was improved (Tudor & Ridpath, 2018b). This feeling may extend into coaching behaviors, with those student-athletes who perceive their coaches to motivate based on praise and development being less likely to face anxiety and burnout than those who felt their coach was uncommitted or uninspiring (Garrett et al., 2020; Roxas & Ridinger, 2016). Student-athletes may also face decreased burnout risks if they have higher intrinsic motivation (Clancy et al., 2016). Additionally, climates which emphasize mastery of certain skills or tasks can foster adaptive learning strategies, leading to success both academically and in life (Clancy et al., 2016; Lochbaum et al., 2019).

Shell et al. (2016) found that those students who entered a course with positive motivation were significantly more likely to be retained in those courses; interestingly, motivation was not also found to predict grade-based academic achievement. Those students with higher motivations that were considered future-oriented or related to personal growth were the most likely to be retained, with the exception of those who did not feel the course was meeting their goals (Shell et al., 2016). Interestingly, Shell et al. (2016) noted that those with lower goal orientation actually had higher grades in the courses studied. Conversely, Bailey and Phillips (2015) found that students with greater intrinsic motivation to gain knowledge and accomplish tasks tended to be more satisfied with life and had a greater positive affect overall.

Even more striking, perhaps, is that those students who were largely amotivated not only had decreased performance but also decreased mental health overall (Bailey & Phillips, 2015).

Summary

The ability and desire to persist in higher education is influenced by a number of factors. Demographic, precollege, and sport-related variables not only play a role in determining where a student-athlete enrolls, but also in the decision to persist at that institution or to dropout. These factors may also influence the decision to depart from athletics while still remaining enrolled at their original campus. Once the student-athlete arrives on campus, there are a host of new influences on their ultimate ability and decision to persist in academia. Finding a social support system both within and outside of their sport team is often a critical factor in both academic success and, ultimately, persistence at the institution.

For Division III student-athletes in particular, there is a great need for the support of the institution. Unfortunately, many of the on-campus support services that student-athletes require are less effective than they should be at these institutions. In cases where these services are available, they are not always accessible; even more troubling are the institutions in which these resources cause more harm than good. Most importantly, it seems that motivation, both athletic and academic, may hold the key to predicting student-athletes' university attrition status. In determining the ultimate retention or attrition status of a student-athlete from their sport and from the institution, student engagement and overall motivation emerge as the most impactful factors. This study will focus on the possibility that gender, sport-type, and sport attrition may play a mitigating role in university attrition of a student-athlete from an NCAA DIII institution.

CHAPTER THREE: METHODS

Overview

The purpose of this quantitative, correlational research study was to investigate the predictive qualities of gender, sport-type, and sport attrition on university attrition at a small, private, NCAA DIII institution in Pennsylvania. Using the Statistical Package for the Social Sciences (SPSS©) as the data analysis tool, archival attrition data was analyzed using a logistic regression analysis. Described in this chapter are the research design, research question, null hypothesis, participants and setting, instrumentation, data collection procedures, and data analysis strategy. It was expected that the results of this research would provide data that may influence decision-making at the departmental and institutional level.

Design

This quantitative, nonexperimental, correlational research study was used to investigate the predictive qualities of gender, sport-type, and sport attrition on university attrition for NCAA DIII student-athletes. Nonexperimental designs such as this allow the researcher to study phenomena as they presently exist, unmanipulated (Gall et al., 2007). This design, with the use of regression analysis, enables the researcher to make predictions that can inform practice and policy (Rovai et al., 2013). An advantage of correlational research is that the degree of the relationship found can be studied, rather than just the mere presence of that relationship (Gall et al., 2007). As the criterion is predicted from a set of predictor variables, variables are analyzed to better understand how they may relate to each other (Gall et al., 2007).

In this case, the criterion variable is university attrition, defined broadly as the discontinuance in institutional enrollment from one academic year to the next (Hagedorn, 2005). Specific to this study, attrition was operationalized as student-athlete participants' enrollment

from one year to the next. The predictor variables included gender, sport-type, and sport attrition. Gender was defined as male or female, based on the gender classification of the sport roster on which an individual was found. For example, if the student-athlete was on the women's soccer roster, they were counted as female. Sport-type was broken down based on revenue status or non-revenue status. At the university under study, revenue sports were defined as those that bring in revenue or notoriety for the campus and include men's and women's basketball, men's ice hockey, and men's lacrosse. Non-revenue sports were those that do not bring in money to the university and included men's and women's soccer, women's volleyball, cross country, track and field, swimming and diving, squash, women's ice hockey, baseball, softball, women's lacrosse. Finally, sport attrition is the continuance or non-continuance in their chosen sport from one year to the next and was determined by the presence or absence of a student-athlete on the same sport roster on which they appeared the previous season. For example, if a track athlete appeared on both the spring 2017 and spring 2018 rosters, that athlete has persisted that year and was coded as continuing; if the athlete did not appear on the 2018 roster, they were coded as non-continuing (i.e. attrition). All data was collected as archival data from the university registrar as well as from publicly accessible sports records.

Research Question

RQ1: How accurately can NCAA DIII student-athletes' university attrition be predicted from a combination of gender, sport-type, and sport attrition?

Null Hypothesis

H₀1: There is no predictive relationship between the criterion variable, student-athlete retention as measured by failure to persist from one year to the next, and a combination of the predictor variables gender, sport-type, sport attrition, for NCAA DIII student-athletes.

Participants and Setting

The data for this study was archival data from the subject university. Participants for the study were drawn from a convenience sample of NCAA DIII collegiate student-athletes at a single small, private institution at which the researcher currently works. Recent graduates and transfers may have been included due to the nature of the data collection, and the data was limited to those who appeared on the most recent four rosters for each team. The most recent four seasons were selected due to institutional changes that may have influenced responses from years prior to 2016. Data from collegiate student-athletes on this campus during the 2016-17, 2017-18, 2018-19, and 2019-20 academic years was used. A total of 545 student-athletes were initially included. One limitation of using data from a single institution and single body of student-athletes was that the students at this institution are not ethnically representative of the overall NCAA student-athlete population, as seen in the comparison made in Table 1.

Table 1

Racial Diversity at "University C" Compared with the NCAA

| | "University C" - Fall 2018 | | NCAA - Fall 2019 | |
|-----------------------------------|----------------------------|--------------|------------------|----------------------------|
| | Percentage | Total Number | Percentage | Total Number (in millions) |
| White | 69% | 865 | 53% | 10.5 |
| Black or African American | 6% | 75 | 13% | 2.6 |
| Hispanic | 2% | 25 | 18% | 3.6 |
| Asian | 3% | 38 | 7% | 1.3 |
| American Indian or Alaskan Native | 0% | 0 | 1% | 0.1 |
| Mixed | 2% | 25 | 4% | 0.7 |
| International Students | 5% | 63 | 6% | 1.1 |
| Unknown/Other | 13% | 163 | 0% | 0 |

Note. Data adapted from the National Center for Education Statistics.

Median enrollment for DIII institutions is 1,736 undergraduate students, which is over 50% higher than the average undergraduate enrollment at this institution of 1,100 students (NCAA, n.d.; Chatham University, n.d.). This institution was chosen due to familiarity to the researcher as well as ease of access. This ease of access results from both the current affiliation with University C as well as University C's unique position in the 2019-20 school year as the head of multiple conference-wide committees.

The student-athletes ($n = 545$) whose data was initially included in this study were 290 females (53%), 255 males (47%), 186 revenue sport participants (34%), and 359 non-revenue sport participants (66%). The student-athletes studied identified as 81% White or Caucasian (440), 3% Black or African American (17), 5% Hispanic (28), 1% Asian (5), <1% American Indian or Alaskan Native (2), 2% mixed race or multi-racial (11), and 5% non-citizen (25); 17 students (3%) did not list an ethnicity. The average age of this population was 19.8, with a range of 17-27. The number of cases analyzed exceeded the sample of $n = 100 + 50i$ participants needed for the logistic regression, where i is the number of predictor variables (Bujang et al., 2018); this sample more than satisfies the 250 cases needed for the analysis. These participation numbers also satisfied the sample size needed for correlational research having a medium effect size, a statistical power of .7, and an alpha level of .05 (Gall et al., 2007).

Instrumentation

Archival data regarding the demographics, sport-related variables, and university attrition status of this specific population were gained by utilizing the Report Request form, located in the documents and forms section of the institution's web page as well as the archived rosters found on the university athletics webpage. The demographic information requested included age, biological sex, department of study, full-time or part-time status, and ethnicity: this information

was used to describe the sample. The sport rosters acquired from the university athletics webpage were used to determine the sample as well as to evaluate sport attrition from one year to the next. The criterion and predictor variables, including how they were measured and coded for analysis, are outlined in Table 2.

Table 2
Variables

| Variable | Archival Data | Category and Code |
|----------------------|---|---|
| Gender | Gender Classification of Team Sport from the Roster | Male/Men (1) Female/Women (0) |
| Sport Type | Revenue Status of Team Sport from the Roster | Revenue Sport (1) men's basketball women's basketball men's ice hockey men's lacrosse Non-Revenue Sport (0) women's soccer men's soccer women's volleyball cross country (men's and women's) track and field (men's and women's) swimming and diving (men's and women's) squash (men's and women's) women's ice hockey baseball softball women's lacrosse |
| Sport Attrition | Presence on given Sport Roster from Year to Year | Continued (1) Did not Continue (0) |
| University Attrition | Enrollment Data from Archival Registrar Data | Continued (1) Did not Continue (0) |

Archival retention data is used in many studies in the field of education. Hagedorn (2005) recognizes the binary analysis of retention and enrollment figures, although retains that the scope of such analysis may be limited. The Institute of Education Sciences (as cited in Shenkle, 2017) also note that binary enrollment status data is a relevant outcome for postsecondary educational research. Most notably, Howard et al., (2012) mention institutional data as reliable for both hypothesis-based and exploratory research methods. They also condone the data specifically for retention-based studies and those which involve at-risk student populations (Howard et al., 2012). Because all data is archival, from a single institution, and a single database, there were no anticipated issues with consistency.

Procedures

First, the researcher pursued IRB approval with both the institution where the degree is being sought and the institution in which the research is to be conducted. Informal approval from the registrar and institutional research offices to utilize archival persistence data was obtained prior to seeking IRB approval. Approval from both IRB's was obtained independently, then an application for the archival data from the institution of study was submitted through the Report Request function at that institution.

For the archival attrition and demographic data, a Report Request was submitted to the registrar's office on campus per request of the institution. As an attachment to the Report Request, a brief explanation of the request and a list of the student-athlete names of interest was submitted. These names were gathered ahead of the request through archived rosters located on the university athletics webpage. The requested archival data was returned to the researcher with all identifying information removed in order to help preserve anonymity of the data. Variables were then coded as described in Table 2 for use in the statistical analysis. Variable coding was

conducted by the primary researcher prior to beginning analysis.

All electronically collected data was saved on a password protected personal computer and backed up to a password protected external storage device. If this data should need to be removed from the computer, an encrypted removable storage device will be used and a strict chain of custody will be followed, with the removable device ultimately residing in a locked cabinet. Any printed materials that may result from this study are kept in a locked cabinet when not in use. Upon the completion of the initial analysis, any and all records will be permanently stored in a locked cabinet; data that is deemed to no longer be useful, such as paper records, will be destroyed by shredding. Results will be made available upon request to the participating university and other comparable institutions.

Data Analysis

A logistic regression analysis was used to determine the predictive qualities of the combination of gender, sport-type, and sport attrition on the criterion of student-athletes' university attrition. This type of analysis allows the researcher to determine correlation between a given dichotomous criterion variable and a set of predictor variables (Gall et al., 2007). In this case, the criterion was university attrition, which is a dichotomous variable (i.e. Continued (1) or Did not Continue/Attrition (0)). The predictors included gender, sport-type, and sport attrition, as defined above.

For a logistic regression, certain assumptions need to be tested and met. First, the data must be screened for any outliers or influential data points. A case wise diagnostic analysis was conducted to ensure this assumption was not violated. As the dependent variable is binary (attrition or not), a binary logistic regression can be used; additionally, observations will be free from repeated measures or matched data (Statistics Solutions, 2020). The assumption of non-

multicollinearity must also be met in order to proceed with analysis. In other words, two or more predictor variables should not be highly correlated with each other. This assumption of non-multicollinearity was examined through Variance Inflation Factor (VIF) values (Rovai et al., 2013). The VIF is acceptable between 1 and 5; a VIF greater than ten indicates multicollinearity and thereby violates the assumption of non-multicollinearity. Moreover, a sample size of at least 250 must be used (Bujang et al., 2018). An alpha level of $< .05$ will be set for significance for the analysis.

Results of the direct logistic regression analysis were intended to demonstrate whether the entire model, including all variables, significantly predicts whether a student did or did not continue and was measured as follows: $X^2 (df, N = 00) = 00, p < .05$. The overall effect size will demonstrate how much variance in attrition is explained by the entire model, or the combination of the three predictor variables (Gall et al., 2007; Rovai et al., 2013). A table with the Wald value was used to demonstrate how each individual variable did or did not make a significant individual contribution in explaining attrition.

Known Limitations

One concern in research of this kind is that of participant or data selection; it is important to ensure that subjects are representative of the broader population of interest. In this case, the homogeneity of the sample ends after the identification of student-athlete. As addressed previously in Table 1, a known limitation is that the demographics at this institution are not wholly representative of the national DIII student-athlete population, making the results less transferable.

CHAPTER FOUR: FINDINGS

Overview

A logistic regression analysis was conducted to examine the predictability of three variables on the overall academic attrition of the student-athlete population at a single University. This type of analysis helps identify and explain relationships between predictor and criterion variables. Upon analyzing the data, it was found that all three variables of interest—roster gender, revenue sport status, and sport attrition—were significantly correlated with the dependent variable, academic attrition. Sport attrition status was the best predictor of academic attrition status among the studied variables, but the combination of predictor variables was not found to influence the overall model. In this chapter, descriptive statistics will be used to provide an overview of the sample and the analysis. Statistical data will then be summarized based on the null hypothesis, to include all data screens and assumption testing.

Research Question

RQ1: How accurately can NCAA DIII student-athletes' university attrition be predicted from a linear combination of gender, sport-type, and sport attrition?

Null Hypothesis

H₀1: There is no predictive relationship between the criterion variable, student-athlete retention as measured by failure to persist from one year to the next, and a combination of the predictor variables gender, sport-type, sport attrition, for NCAA DIII student-athletes.

Demographic Information

The data utilized came from a single, private, liberal arts institution located in Western Pennsylvania that participates at the NCAA DIII level for athletics. Archival data based on 409 student-athletes found on rosters from the academic years 2016-17 through 2019-20 were

utilized for the sample studied. Table 3 describes the sample further, reporting frequency data for the predictor and criterion variables.

Table 3

Description of Demographics and Variable Frequencies

| | Category | Frequency | Percent |
|-----------------------|------------------|-----------|---------|
| Gender (Roster) | Female | 231 | 56.5 |
| | Male | 178 | 43.5 |
| Sport Type | Non-Revenue | 272 | 66.5 |
| | Revenue | 137 | 33.5 |
| Sport Attrition | Continued | 256 | 62.6 |
| | Did not Continue | 153 | 37.4 |
| Academic Attrition | Continued | 359 | 87.8 |
| | Did not Continue | 50 | 12.2 |

Results

Data Screening

When preparing data from sport rosters, the researcher utilized public information and transferred the information by hand into a Microsoft Excel sheet. This data was checked for accuracy to the original rosters after each team was entered. When screening the archival data, it was necessary to remove all student-athletes who were a first-year student during the 19-20 school year, as there would be no way to determine their attrition status based on a single year of participation. Once this data was removed, the research coded the remaining data according to each of the variables as described in Table 2. A spot-check was done on the data with no inaccuracies found.

Assumption Testing

In order to assess for multicollinearity, a correlational matrix demonstrating the association among predictor variables was completed. While many of these correlation coefficients were statistically significant, effect sizes were generally small and none were greater than .90; therefore, multicollinearity was not found. Interestingly, the only non-significant correlation was between gender and sport attrition. The data was also screened for outliers and none were found.

Analysis

A binomial logistic regression was performed to identify the influence of gender, sport-type, and sport attrition on the likelihood that student-athletes would persist in their academic studies. Results of the logistic regression analysis demonstrated that the entire model did significantly predict academic attrition, $X^2(3, N = 409) = 122.00, p = .000$. Additionally, the Cox and Snell and Nagelkerke R^2 values imply that between 25.8% and 49.2% of the variations in the model can be explained by the predictor variables. The Hosmer and Lemeshow goodness of fit test also suggests a near perfect prediction, $X^2(3, N = 409) = .399, p = .995$. Overall, the model can correctly predict the academic attrition outcome for a case 87.8% of the time. Unfortunately, even with the promising p -values reported above, there is no improvement in the final model's ability to predict outcomes of academic attrition when compared with the baseline.

When evaluating each of the three predictor variables independently, only gender was found to be significant. Table 4 shows these values. Although not found to be significant, it is interesting to note that participating on a revenue sport team (men's and women's basketball, men's ice hockey, or men's lacrosse) made a student-athlete 1.048 times more likely to persist in academics. This may be partially explained by the significance in gender, since the majority of

revenue sport participants are male. Worth noting is the implication that sport attrition status had virtually no impact on academic attrition status.

Table 4

Significance of Predictor Variables

| | Wald | <i>df</i> | <i>p</i> | Exp (B) |
|-----------------|-------|-----------|----------|-----------|
| Gender (Roster) | 5.821 | 1 | 0.016 | 3.207 |
| Revenue Sport | 0.009 | 1 | 0.923 | 1.048 |
| Sport Attrition | 0.000 | 1 | 0.993 | 0.000 |
| Constant | 0.000 | 1 | 0.993 | 917815986 |

When evaluating the analysis of this data, some things stood out as “too good to be true.” Further inspection into the data revealed a complete separation in the data, where two different linear combinations of predictor variables perfectly predicted the criterion variable outcome. In this sample, 16 cases had the combination of non-revenue sport, female, and did not continue with sport; in all 16 of those cases the student-athlete did not persist. On a larger scale, 62 cases had the combination of revenue sport, male, and did continue with sport; all 62 of these student-athletes also persisted with academics. While compelling, it is unlikely that either of these combinations of predictor variables are truly perfect predictors and should not be interpreted as such. These 78 cases cause bias within the data, skewing the Wald estimates and influencing the significance of the model. Due to the high percentage of the data these cases made up (19%), the researcher ran the analysis without these cases as well.

Excluding the 78 cases causing complete separation, the model is still statistically significant, $X^2(3, N = 330) = 107.266, p = .000$, with gender being the only individual factor that remains statistically significant on its own; however, the model still does not improve the predictability of academic attrition outcomes when compared to baseline. Table 5 shows the

frequencies of cases in this analysis. When screening the data with these cases removed, there were two outliers found; these cases were left in the analysis because they are real student-athletes. As with the full data set, there were some statistically significant correlations found but multicollinearity was not violated. The new significance values for the predictor variables are found in Table 6. Most notably, in this new model, being male seems to be able to predict an outcome over 23 times as often as being female; revenue sport status has a similar influence on prediction (1.45 times) as before (1.05 times).

Table 5

Description of Variable Frequencies with Cases Removed

| | Category | Frequency | Percent |
|--------------------|------------------|-----------|---------|
| Gender (Roster) | Female | 215 | 65.2 |
| | Male | 115 | 34.8 |
| Sport Type | Non-Revenue | 256 | 77.6 |
| | Revenue | 74 | 22.4 |
| Sport Attrition | Continued | 193 | 58.5 |
| | Did not Continue | 137 | 41.5 |
| Academic Attrition | Continued | 296 | 89.7 |
| | Did not Continue | 34 | 10.3 |

Table 6

Significance of Predictor Variables with Cases Removed

| | Wald | df | p | Exp (B) |
|-----------------|--------|----|-------|-----------|
| Gender (Roster) | 14.453 | 1 | 0.000 | 23.433 |
| Revenue Sport | .485 | 1 | 0.486 | 1.457 |
| Sport Attrition | 0.000 | 1 | 0.994 | 0.000 |
| Constant | 0.000 | 1 | 0.994 | 252367141 |

CHAPTER FIVE: CONCLUSIONS

Overview

A logistic regression analysis was conducted to examine the predictability of gender, sport-type, and sport attrition on the overall academic attrition of the student-athlete population at a single University. While the combination of variables was found to be significantly correlated with the criterion of academic attrition, only one variable—gender—was found to be significantly predictive of that outcome. Throughout this chapter, a discussion of the data will be presented based on the findings regarding each of these predictor variables, to include any supportive or contradictory findings in the literature. The implications of the findings are presented in the context of University C, the NCAA DIII environment, and in higher education as a whole. Finally, the limitations of this study and data are included along with recommendation for future research on this topic.

Discussion

The purpose of this study was to determine the predictive capability of the combination of gender, sport-type, and sport attrition on the university attrition rates of student-athletes attending a single DIII institution. Archival data spanning a four academic-year span was utilized in order to capture a substantial number of participants at this institution to be included in analysis. At the NCAA DIII level, there is little literature regarding student-athletes and attrition; this is a gravely missed opportunity to address this special, vulnerable population. In general, this study seemed to confirm earlier research regarding biological males having lower academic motivation (McElveen & Ibele, 2019; Tudor & Ridpath, 2018a) and about the importance of social integration (Antshel et al., 2016; Gabana et al., 2017; Hendricks & Johnson, 2016; Melendez, 2015; Turk & Gonzalez Canche, 2018; Wenger, 2000; Yukhymenko-Lescroart et al.,

2015), while refuting the idea that revenue sport participation would negatively impact retention (Beron & Piquero, 2016; Huml et al., 2019; Rankin et al., 2016; Watson, 2016). A further delineation of these relationships with previous research are found in this section, but ultimately these study results echo many other researchers in this area: more research is needed.

Relating to Theories

Tinto (1975) maintained that student dropout must be viewed longitudinally in order to account for the many complex interactions and experiences of an individual in relation to their ultimate decision to persist or drop out. Previous research emphasized the possibility that increased social integration may decrease academic success, but did not account for many individual differences or motivation types (Tinto, 1975). Because there was no statistically significant predictive relationship between sport attrition and university attrition or between sport-type and university attrition, the results of this study seem to support Tinto's (1975) thoughts that there must be more individual characteristics and motivations to consider when evaluating student dropout.

Whether intrinsic or extrinsic, those who engage more regularly in self-motivated behaviors generally tend to stay in school longer and have greater academic success (Deci et al., 1991). Some may consider the choice to play a sport in college, and even what type of sport to play, an autonomous action or self-motivated behavior, but there are often many additional factors involved in that decision. Revenue sports tend to be more regimented and high-pressure than their non-revenue counterparts, thereby eliminating some of that self-motivated or autonomous decision-making ability, so in this way it makes sense that study participants on revenue sport teams were both more likely to dropout and less likely to be retained. Additionally, utilizing external stimuli like rewards or punishments can increase the pressure on student-

athletes, diminishing their perceived autonomy and decreasing their self-motivation (Deci et al., 1991). Rewards such as increased playing time, leadership status, or even physical trophies as well as punishments such as being “benched” or engaging in additional cardiovascular conditioning exercise are inherent to the athletics world. These behaviors are likely to decrease the intrinsic value of the activity for a student-athlete, potentially leading to associated negative academic and social consequences. College students thrive with the opportunity to make choices about the activities in which they engage, so taking that choice away could certainly lead to a dropout decision (Deci et al., 1991).

Finally, regarding the social construct of belonging, Wenger (2000) emphasizes ideas such as mutual engagement and joint enterprise as key factors for success in society. Participation in a community, Wenger (2000) says, is the core of what makes human beings capable of meaningful knowledge; these communities are the foundation for social learning systems. Additionally, the formation of and participation in these communities can help a student-athlete form their own personal identity (Wenger, 2000). Collegiate sport teams, and the athletics department as a whole, are pre-existing and all-encompassing communities for students to join. Those who actively engage with these ready-made communities in substantial and mutually beneficial ways are more likely to increase their confidence as well as their overall success in the higher education environment (Masika & Jones, 2016). The results of this study line up with these ideas about communities and belonging; those who continued with their sport were more likely to be retained than those who did not.

Relating to Gender

The data in this study seems to suggest that, in line with previous research, females are generally more likely to persist in academics through graduation than their male student

counterparts. Specifically, prior research found that women's athletics team members tend to have higher academic motivation while men's team members tend to have higher athletic motivation (McElveen & Ibele, 2019; Tudor & Ridpath, 2018a). Female students are more likely to be well-adjusted in the academic environment and have a positive attitude toward their academic pursuits and, therefore, they are more likely to find success and persist, regardless of sport participation (Antshel et al., 2016; Beron & Piquero, 2016; Dougherty & Dougherty, 2018; Melendez, 2015; Rankin et al., 2016). The student-athletes at University C do not seem to be any exception to these ideas, with a smaller percentage of female student athletes departing the institution and a larger percentage being retained when compared with the males in the study.

Relating to Sport-Type

Similar to the existing literature on the topic, this study did not yield much clarity on the influence of a revenue-generating sport on overall attrition. Although athletic identity may be stronger in revenue-sport participants (Beron & Piquero, 2016; Huml et al., 2019; Rankin et al., 2016) and therefore that participation may produce a diminished academic focus (Rubin & Moses, 2017), it is equally possible that there is no significant difference between the sport-types in regards to attrition (Rankin et al., 2016; Tudor and Ridpath, 2018a). A near equal percentage of student-athletes on both revenue and non-revenue sport teams in this study did not continue to pursue academics at this university. In the retention group, there was a higher percentage of non-revenue athletes who were retained, but it is hard to draw conclusions from this sample.

Relating to Sport Attrition

In this study, those student-athletes who remained on a sport roster from year to year were more likely to be retained than those who quit their sport. This is in line with much of the research, which indicates that many student-athletes have only chosen a given institution due to

their ability to participate on an athletics team (Beron & Piquero, 2016; Garrett et al., 2020; Lim et al., 2017; McElveen & Ibele, 2019; Richards et al., 2016; Vogel et al., 2019). It would stand to reason that without belonging to a team, a given student-athlete may not continue to persist academically. Similarly, feeling a sense of belonging or “fit” at the university tends to be a strong predictor of both success and persistence (Brecht & Burnett, 2019; Dougherty & Dougherty, 2018; Rankin et al., 2016; Richards et al., 2016; Tinto, 1975; Wilkins et al., 2016). Furthermore, there are many student-athletes who strongly identify with their role as an athlete, spending more time cultivating that rather than enhancing their academic identity or other facets of their identity (Huml et al., 2019; Watson, 2016). One limitation of this study data is that by default, any student-athlete who did not persist academically must also not have persisted athletically, since you cannot be a student-athlete without being enrolled in courses. However, it is still telling that of those who were retained at the institution, a larger percentage were also continuing with sport participation than not.

Implications

This study revealed both theoretical and practical implications regarding the attrition tendencies of NCAA DIII student-athletes. These implications can serve as a foundation for higher education professionals who seek to create a better undergraduate experience for this population as well as those who are concerned with overall university attrition rates. Utilizing theoretical and practical factors revealed by this study as ground work for change will help not only the student-athlete population at this particular institution but can likely be utilized to enhance the experiences of NCAA DIII student-athletes everywhere.

From a theoretical standpoint, it is poignant to echo Tinto’s (1975) goal in differentiating types of student dropout, more commonly referred to now as attrition. This study does seem to

indicate that different types of attrition exist, especially when considering that over three times as many participants left their sport as left the university altogether. Deci et al.'s (1991) self-determination theory emphasizes that those who are more self-motivated and allowed to explore their own autonomy are more likely to persist in higher education. The argument can be made that the choice and commitment to being a student-athlete exemplifies these self-motivated behaviors, thereby increasing the likelihood that this population persists in general. However, it is equally easy to consider the increased reliance on the institution among this population as a weakened sense of self-determination. More research certainly needs to be done in this area. And finally, relating to a sense of belonging, Wenger's (2000) emphasis on finding a community of which to be a part is quite easily attained in the athletics world. Student-athletes who take an active role on their team, participating in activities with a common goal while engaging with other team members, can increase their overall confidence and overall sense of belonging (Masika & Jones, 2016; Wenger, 2000).

Logistic regression analysis found that all three variables studied were significantly correlated with academic—or university—attrition; sport attrition was the most highly correlated, but gender was the only variable found to be significantly predictive. The finding that more females were retained than males was in line with previous research, and should suggest to student affairs professionals and athletics departments alike that the male sport teams may need to have more academic oversight and more resources available to them. Additionally, it is interesting to note that although revenue sport status was not found to be significant in the analysis, it still indicated that those involved with revenue sport teams were over one time more likely to be retained; given that there are substantially more males on revenue teams than females, this is a somewhat contradictory finding. One possibility here is that, due to their

perceived importance on campus and within the athletics department, revenue sport teams may be afforded the additional oversight and resources needed for increased success that other male teams are not. Regarding the secondary model where the 78 perfect predictor cases were removed, all three variables remained significantly correlated with academic attrition; and again, only gender was found to be significantly predictive.

Limitations

Studying a single university at a relatively singular point in time has many limitations, both internal and external. One of these is certainly the inconsistency between the demographics at University C and those of the NCAA member institutions as a whole; as demonstrated in Table 1, there is a substantially lower percentage of minority students at University C than in the broader NCAA group. While each school is certainly expected to be unique, this does lead to some issues with potential transferability or generalization of the results. Similarly, this particular institution was previously an all-women's college, which could result in some discrepancies not only in the percentage of female students compared to males, but also in the overall ideologies of many students choosing to attend this institution. A further limitation of this particular institution is the lack of several "traditional" sports teams on campus; namely, there is no football program. These are all threats to the external validity or transferability of the results, but no practical solution exists to limit these inherent challenges.

Regarding the sample itself, there are some potential limitations worth acknowledging, as future inquiries may be able to minimize or eliminate some of these issues. First, there was no way, in the data provided, to account for exchange students, medical years of absence, or other potential temporary interruptions in enrollment status. In this dataset, these student-athletes were coded as non-continuing, or attrition, due to the interruption in enrollment status; however, it is

possible not only that there was a more complex reason for their absence but that they may have even returned both to sport and school within the next year or two. Similarly, some student-athletes take a year off to focus on their schoolwork, whether mandated or by choice, and there was no way to account for their re-joining of a sport roster in this model. Next, there were a handful of student-athletes in the dataset that are multi-sport athletes, participating on more than one sport roster. For this study, to help control the threat to internal validity of counting participants multiple times, they were counted only once, as they are only one person, but this may have left room for error with noting revenue sport status or even sport-team attrition if they were on different types of teams or left one while persisting on another.

Finally, correlational and regression-based analyses mean that only correlational, not causal, inferences can be drawn. Instrumentation may also be considered a limitation, as the use of archival data limited the scope of variables examined and the scope of information available. There were a number of student-athletes who simply could not be accounted for in the data sample. When gaining access to the archival data, 545 records were requested. Of the 545 student-athletes intended to be included in the study, university attrition data was available for only 464. This was largely due to discrepancies in nicknames, maiden names, or other inconsistencies between athletics rosters and university data. Along these same lines, there was no way to account for students in their first year of attendance during the 2019-20 school year. Because there was no attrition or retention data for them from one year to another, they were not included in the sample. Once matched for these and other factors, only 409 participants of the original 545 could be included in the final study sample.

Recommendations for Future Research

Recommendations for future research in this case are largely centered around expanding the generalizability and transferability of results. Increasing the collective knowledge in this field of study is essential to providing a better experience for NCAA DIII student-athletes and helping them to achieve their academic goals.

1. Consider race, generational status, major of study, and other demographic factors as potential predictor variables
2. Consider more complex statistical modeling in order to more fully understand the relationship between existing variables
3. Elicit qualitative responses from participants who have not persisted in order to identify other factors of importance in this area
4. Further elicit qualitative responses to those who have not persisted to look at the differences described by Tinto (1975) regarding forced and voluntary departure
5. Investigate those students who leave their sport but do not leave the university; they may have great insight into the true NCAA DIII difference (greater emphasis on academics than their DI/DII counterparts)
6. Expand the sample to include other DIII colleges and universities
7. Expand the sample to include comparison across NCAA divisions

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