An Examination of Differences in Division I FBS Student-Athlete Academic and Athletic Performance

Marissa Katherine Nichols

University of Nevada, Las Vegas, marissanichols23@gmail.com

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AN EXAMINATION OF DIFFERENCES IN DIVISION I FBS STUDENT-ATHLETE

ACADEMIC AND ATHLETIC PERFORMANCE

By

Marissa K. Nichols

Bachelor of Science – Human Services Counseling
University of Nevada, Las Vegas
2008

Master of Education – School Counseling
University of Nevada, Las Vegas
2010

A dissertation submitted in partial fulfillment
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College of Education
The Graduate College

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Marissa K. Nichols

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Doctor of Philosophy – Higher Education
Department of Educational Psychology and Higher Education

Nancy Lough, Ed.D.                        Kathryn Hausbeck Korgan, Ph.D.
Examination Committee Co-Chair                      Graduate College Interim Dean

Alice Corkill, Ph.D.
Examination Committee Co-Chair

Vicki Rosser, Ph.D.
Examination Committee Member

Jennifer Pharr, Ph.D.
Graduate College Faculty Representative
ABSTRACT

The student-athlete literature is replete with studies that examine the factors that appear to improve or inhibit academic or athletic performance. However, internal characteristics that may influence variations in performance have been understudied, and athletic performance tends to be examined separately from academic performance.

This study examined how different types of Division I FBS performers – high academic, high athletic; high academic, low athletic; low athletic, high academic; and low academic, low athletic – differ on three theoretical and conceptual frameworks representing internal factors. Each of the frameworks, Mindset, Personal Growth Initiative, and Student-Athlete Experiences, have positive attributes relative to performance, development, and well-being.

Although not all variables were statistically significant, there were meaningful differences between high and low academic performers on academic experiences. Student-athletes in this sample also displayed a growth mindset towards academic and athletic abilities, as well as high levels of Personal Growth Initiative. In addition, student-athletes who performed at high levels athletically did not report fewer experiences academically. This study also contributed an athletic performance metric that can be used and improved upon to quantify individual athletic performance in higher education, irrespective of sport.

Keywords: Student-athlete, academic performance, athletic performance, internal factors, mindset, personal growth, experiences
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CHAPTER 1
INTRODUCTION

In recent years intercollegiate athletics has reached new heights in the ability to influence institutional prestige and visibility, generate revenue and advance infrastructure, and uphold expectations of student-athletes to excel both in the classroom and on the playing field. To achieve these heights, reform groups including the Knight Commission on Intercollegiate Athletics have advocated for higher academic benchmarks, including incentivizing academic outcomes (Knight Commission on Intercollegiate Athletics, 2010). Accordingly, the National Collegiate Athletic Association (NCAA) continues to implement rigorous accountability metrics such as the Academic Progress Rate (APR) and adopt eligibility standards reflecting a higher academic pedigree. More locally, institutional academic support units and life skills professionals balance an expansive repertoire of academic support services for student-athletes, to facilitate their holistic development in the areas of academic opportunity, development, and success (National Association of Academic Advisors for Athletics, 2014).

Simultaneously, student-athletes face a standard to compete and perform at the highest level of amateur sport with coaches and athletic departments under increased pressure to produce winning teams and generate revenue at the institutional level (Eitzen, 2009). As a result, researchers have identified sources of role conflict among student-athletes based on competing time demands and extraordinary pressures to perform academically and in athletic competition (Killeya-Jones, 2005; Marx, Huffmon, & Doyle, 2008). At every level, the stakes are high and it is incumbent upon student-athletes to perform at optimal levels and at their full potential.

As a result of these circumstances, the academic and athletic performance of student-athletes in higher education has garnered significant interest among various stakeholders. There are copious amounts of research dedicated to understanding the academic or athletic success of student-athletes in higher education; however, to date no study has attempted to examine differences between high and low academic and athletic performers through the lens of psychological, developmental, and behavior-based
frameworks pertaining to an individual’s mindset, initiative to develop as a person, and experiences in higher education.

Background

The literature is comprehensive in terms of factors that positively influence or inhibit the academic performance of student-athletes. These factors tend to align with three main themes: 1) precollege factors, or indicators students enter higher education institutions with; 2) external factors outside of individual control; and 3) internal factors that may be controllable by the individual. Examples of precollege factors include standardized test scores and high school grade point average (GPA); external factors involve student and faculty interaction, coaches influence, and athletic department strategy; and internal factors such as individual motivation, identity, and the impact of positive personal attributes. While variations in athletic performance have also received considerable attention, the majority of researchers have focused on academic factors. Athletic performance variations include the same main themes: 1) precollege factors such as high school size; 2) external factors including pressure to strengthen athletic commitment and stereotypical messages aimed at athletes; and 3) internal factors like sport specific psychological traits, such as the ability to cope with adversity.

Studies to date have focused on measuring graduation rates (Dilley-Knowles, Burnett, & Peak, 2010), documenting student-athlete academic motivation (Simons, Van Rheenen, & Covington, 1999), predicting academic performance based on high school variables (Lang, Dunham, & Alpert, 1988), understanding how athletic success affects graduation rates (Rishe, 2003), athletic participation influencing college adjustment (Melendez, 2006), academic and athletic identity shaping classroom performance (Harrison, Stone, Shapiro, Yee, Boyd, & Rullan, 2009), examining athletic motivation among student-athletes (Gaston-Gayles, 2004), and recognizing achievement and subsequent athletic performance (P.A. Adler & P. Adler, 1991). The experiences of student-athletes on college campuses are also well documented (Potuto & O’Hanlon, 2007).

Ironically, few studies measure both the academic and athletic performance of a student-athlete. This mentality neglects to recognize the intricacies of the collegiate athletic role as both a student and
athlete. Another interesting dynamic is that “student-athlete success” has many interpretations. This is based on the various criteria used throughout the literature to define success or performance. The primary academic success measures are graduation rates (Gottschalk & Milton, 2010; NCAA, 2014a), as well as college GPA which is used as an indicator to compare performance among student-athlete groups (Maloney & McCormick, 1993; Pascarella, Bohr, Nora, & Terenzini, 1995). Athletic success, however, is not as well defined. Some studies use factors such as roster spot or frequency of competition, post-season competition, and individual accolades earned by the student-athlete (Rankin, Merson, Sorgen, McHale, Loya, & Oseguera, 2011). Other studies rely on scales that assess positive aspects of athletic performance such as how often one expects to be successful, the motivation to compete, or sport specific statistics (Catina & Iso-Ahola, 2004; Reese, 2005). In this study, student-athlete success is defined by attaining a high level of academic and athletic performance. The external factors theme is well studied, whereas there is additional work to be accomplished under the internal factors theme.

**Theoretical and Conceptual Frameworks**

There remains a need to understand internal factors among Division I student-athletes’ with varying levels of academic and athletic performance. Specifically, there is a need to examine how high and low performers differ on various internal processes that can be modified. Therefore, three psychological, developmental, and behavior-based frameworks representing the continued investigation of student-athletes’ internal factors were used to guide this study. The first theoretical framework is Dweck’s Mindset, formally known as Implicit Theories of Self, which addresses the beliefs and attitudes student-athletes have about their abilities. Through this psychological construct, an individual is categorized with a growth mindset, or the belief that intelligence/academic abilities and/or athletic abilities are malleable – or a fixed mindset, the belief that intelligence/academic abilities and/or athletic abilities are a fixed, concrete entity (Dweck, 2006). The second developmental theoretical framework, Personal Growth Initiative (Robitschek, Ashton, Spering, Geiger, Byers, Schotts, & Thoen, 2012), measures one’s cognitive and behavioral processes involving personal development and provides insight into one’s ability to engage in active and intentional personal growth processes. The final behavior-based
conceptual framework, Student-Athlete Experiences (Cox, Sandstedt, Martens, Ward, Webber, & Ivey, 2004) quantifies the various academic, social, and other assorted (hereafter everyday) experiences student-athletes engage in during college, with a higher number of experiences resulting in meaningful academic and liberal arts gains. This study relied on a combination of three frameworks, two theoretically based and one conceptually based to drive this study. The following sections substantiate these theoretical and conceptual frameworks.

Implicit Theories of Self, more traditionally referred to as Mindset (Dweck, 2006), is characterized by two values acquired from a 16-item survey. Beliefs about academic ability are measured on an eight-point continuous scale as are beliefs about athletic ability (Dweck, 1999). The scores of each scale classify student-athletes as having a growth mindset (implicit beliefs) or a fixed mindset (entity beliefs) about both intelligence/academic and athletic abilities. There are many positive conclusions about holding an incremental (growth) theory of intelligence over an entity (fixed) theory, including: increases in academic motivation and performance, positive responses to academic challenges, a focus on learning goals that expand knowledge versus performance goals documenting ability, motivation to seek challenges and perceive risks as beneficial to development, and attribute shortcomings to a lack of effort rather than a lack of ability (Dweck, 1999; Henderson & Dweck, 1990; Blackwell, Dweck, & Trzesniewski, 2007; Dweck & Leggett, 1988; Chiu, Hong, & Dweck, 1997; Hong, Chiu, Dweck, Lin, & Wan, 1999; Robins & Pals, 2002). Collegiate athletic performance has not been studied through the Mindset framework.

The second theoretical framework is Personal Growth Initiative (PGI), which is the active and intentional engagement in growth-enhancing behaviors and change benefiting all areas of life (Robitschek, 1998; Robitschek, 1999; Robitschek & Kashubeck, 1999). The Personal Growth Initiative Scale II (PGIS) is comprised of 16 items that measure cognitive processes (subscales of Readiness for Change and Planfulness) and behavioral processes (subscales Using Resources and Intentional Behavior) directed at personal growth. The PGI Scale-II distinguishes between high and low levels of PGI by summing the subscale scores and dividing by four (the number of scales) to provide a total score for
overall level of PGI (Robitschek et al., 2012). Higher levels of PGI indicate one’s ability to 1) know how to change and believe that change is possible, and 2) hold the skills to enact the change process. According to Ryff (1989), higher levels of PGI should promote greater wellness because engaging in behaviors aimed at reaching one’s potential reflect the essence of well-being. Higher levels of PGI are associated with greater levels of well-being (Robitschek, 1999; Robitschek & Keyes, 2009), lower levels of anxiety and depression (Robitschek & Kashubeck, 1999), an increase in healthy coping (Robitschek et al., 2012) and indicate transferability of growth across life domains, especially those affecting personal identity (Thoen & Robitschek, 2013). College students with high PGI reported high levels of instrumentality, assertiveness, internal locus of control, and lower levels of chance oriented locus of control (Robitschek, 1998). Similar to Mindset, collegiate athletic performance had also not been studied through the lens of the PGI framework.

The third conceptual framework was Student-Athlete Experiences (SAE), which measures student-athlete experiences in terms of academic experiences, social experiences, and everyday experiences based on a 39-item scale (Cox et al., 2004). Items loaded on social interaction and academic experiences are explicitly social and academic in nature, while everyday items comprise a mixture of experiences that have less depth (Cox et al., 2004). Everyday experiences include activities such as participating in student government, visiting the career center and talking to a counselor about career opportunities, and participating in a campus social event (Cox et al., 2004). The SAEI sums items within each subscale, divides by the number of items, and multiplies by 10 to obtain sub-scale scores which distinguish between high and low experiences of student-athletes in each of the three categories (Cox et al., 2004). The three subscales of the SAEI were paired with a Student-Athlete Gains Inventory (SAGI) in order to determine predictive validity. Higher scores on each of the three SAEI subscales were meaningfully related to liberal arts and practical gains on the SAGI (Cox et al., 2004). Experiences that were academic and social in nature were more predictive of gains than everyday experiences (Cox et al., 2004). The authors (Cox et al., 2004) suggest additional research should focus on studying the effect of experiences on various educational outcomes and gains, which was one of the goals of this this study.
This goal was addressed by examining how academic and athletic performers of various ability levels differ on experiences.

**Statement of the Problem**

While research thoroughly examines precollege, external, and internal factors influencing student-athlete performance, the majority of the research captures external factors, which fall outside of individual control. There were still avenues of internal factors yet to be explored. Higher education as a function prepares students to live productive, fulfilling, responsible, and self-sufficient lives (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006). Through promoting the practice of expanding internal factors and qualities, self-sufficiency may be fostered in a group of students where interdependence is often challenged due to the athletic experience (Howard-Hamilton & Sina, 2001). As research has demonstrated, internal factors can be learned by students which may generate positive change or improvement, such as the case with Mindset and Personal Growth Initiative interventions (Blackwell et al., 2007; Thoen & Robitschek, 2013). Programs such as NCAA Life Skills are facilitated on campuses to address the total development of student-athletes, serving as a space where internal processes such as those highlighted in this study can be addressed. NCAA Life Skills is modeled after the idea that excellence is a result of a balanced life encompassing academic achievement, athletic success, and personal wellbeing (NCAA, 2016a). In contrast, external factors require that change be orchestrated by factors outside of student control, such as an athletics department culture or coaches influence. Furthermore, precollege factors like GPA and standardized test scores cannot be addressed once a student has entered higher education.

Technically, both a high or low academic performer can graduate, given the low performer meets minimal eligibility and institutional benchmarks. A high or low athletic performer can also fulfill their four-year athletic commitment to their team and institution. Yet there is tremendous pressure on athletic departments to be competitive and outperform rivals. Above all, student-athletes face expectations to be successful (Carodine, Almond, & Gratto, 2001) and are both praised or criticized by a variety of individuals (Thelin, 1996). Male student-athletes face pressure from both teammates and friends to excel
(Marx et al., 2008) and female student-athletes report stress due to high expectations to perform from coaches, professors, and roommates (Heller, Bloom, Neil, & Salmela, 2005). Anxiety about poor athletic performance has also been documented (Pinkerton, Hinz, & Barrow, 1989), as well as concern surrounding the ability to maintain academic requirements and excellence in the classroom (Miller & Kerr, 2002). By virtue of the exceptional demands of the student-athlete to not only satisfy requirements but also compete at a high level, there is a need and desire to examine intricacies of high and low performance.

Few studies categorize performance as either “high” or “low” based on specific characteristics. Even fewer distinguish between high and low performers in both the academic and athletic contexts, which acknowledges the collegiate athlete from a holistic perspective. This study sought to determine how prevalent these internal factors are among various levels of performers, and build profiles of internal factors (Mindset, PGI, Student-Athlete Experiences) found among student-athletes who attain “high” and “low” levels of academic and athletic performance.

**Purpose of the Study**

The purpose of this study was to examine differences in internal factors among Division I student-athletes’ levels of academic performance and athletic performance. The academic and athletic performance of student-athletes has been investigated for decades, however, the majority of these studies focus on external factors outside of student control that contribute to or inhibit student-athlete performance. In addition, few studies categorize variations in academic and athletic performance. Moreover, many of these studies tend to examine academic and athletic performance independent of one another. Thus, there was a need to conduct a study examining a set of frameworks reflecting internal factors across high and low levels of student-athlete academic and athletic performance. The working definition of student-athlete success is attaining high performance both academically and athletically as defined by the incorporated performance metrics.

**Research Question**

This study was designed to examine how academic and athletic performers of various ability
levels differ on psychological, developmental, and behavior-based frameworks chosen to reflect internal factors. The primary question guiding this study was:

1. How do academic and athletic performers of various ability levels differ on academic Mindset, athletic Mindset, Personal Growth Initiative, and Academic, Social, and Everyday Experiences?

**Overview of Methodology**

This quantitative study is designed to examine undergraduate Division I Football Bowl Subdivision (FBS) student-athlete academic and athletic performance and three theoretical and conceptual frameworks identified as internal factors. A two-factor Multivariate Analysis of Variance (MANOVA) was used to address the research question. This analysis is appropriate in exploring between-group pattern differences on multiple dependent variables (Hand & Taylor, 1987). The between-group pattern differences in this study were classified as academic and athletic performance (independent variables), each with two levels – high and low performance. A two-way MANOVA was used to analyze differences in the internal factors (dependent variables) defined as Mindset, Personal Growth Initiative, and Student-Athlete Experiences among academic and athletic performers of varying ability levels.

**Data Source**

The population used for this study was undergraduate student-athletes at Division I Football Subdivision (FBS) institutions differing in sport type, gender, academic standing (juniors, seniors, as well as postgraduate), and race/ethnicity. Comeaux and Harrison (2011) discuss the importance of seeking common constructs in order to make generalizations representative of the Division I athletic population as a unit. This also aligns with current trends, where Division I student-athletes are conceptualized as a group when policy, programming, or reform is enacted. Primary data was drawn from six different institutions located in the Pacific Northwest, Pacific Southwest, and Desert Regions. Four institutions were from the Power Five conferences, and two institutions were from the Group of Five conferences.

**Data Collection and Analysis**

To obtain the data, the researcher sent an official letter to athletic department administrators requesting student-athlete participation in this study. Once consent was obtained, the researcher worked
with athletic department administrators to organize specific data collection logistics. Athletic department administrators were provided with study materials including a brief introductory video detailing the study purpose, procedures, and confidentiality issues. An electronic Informed Consent was provided to participants via email following the video introduction. Once the participant selected the electronic option to grant consent, access to the inventory was provided. The data was collected through a Qualtrics survey, and IBM SPSS software was used to analyze the data.

**Limitations and Delimitations of the Study**

There are several limitations to this study. The academic performance criteria was based primarily on cumulative GPA. Cumulative GPA was self-reported by the participant, increasing the chance of reporting error. Even so, the very nature of NCAA continuing eligibility criteria require student-athletes be committed to their academic achievement and the pursuit of their degree (NCAA, 2016b). This circumstance should increase student-athletes’ awareness of academic standing at various points in their career, helping to combat issues with self-reported cumulative GPA. Another methodological limitation is the occurrence of social-desirability bias, or when respondents provide seemingly desirable answers to questions measuring attitudes (Fisher, 1993). In this study for example, measuring attitudes is one of the grounding principles in the first construct, Mindset. Along these lines, Dweck’s initial measures included entity theory items only (fixed mindset), as incremental theory items (growth mindset) were originally too appealing and garnered high agreement rates (Dweck, 1999). This issue was addressed and incremental items show a high negative correlation with entity theory items (Dweck, 1999).

In addition, social-desirability bias is common among self-reported behaviors (Mensch & Kandel, 1988), which is the basis of the second and third constructs, Personal Growth Initiative and the Student-Athlete Experiences Inventory. According to Fisher and Katz (2000) among others, response bias is predicated on how strongly a behavior is valued within the respondent’s social system. Even though social-desirability bias is a natural occurrence in social science research (Fisher, 1993), it should be noted as a limitation.
Delimitations

While basic demographic information is collected, differences among schools or student-athlete groups was not analyzed. Those details were beyond the scope of this study. This study instead was designed to make generalizations about performance differences among Division I FBS student-athletes based on internal factors. The sample included juniors, seniors, as well as postgraduate student-athletes. First-year and sophomore student-athletes were not included in this study as performance criteria for this population (such as cumulative GPA, playing time, athletic accolades) was not available for first-year athletes at the time of data collection. In addition, since this study focuses on Division I FBS student-athletes, it excludes student-athletes from Division I Football Championship Series (FCS), Division II, and Division III institutions. Division I FBS was chosen to focus the study on student-athletes believed to experience the highest levels of role conflict due to pressures mentioned previously.

Finally, the respondents were acquired from institutions located in three geographical regions: the Pacific Northwest, the Pacific Southwest, and Rocky Mountain regions. Other regions were not included within this study. Athletic coaches recruit student-athletes from across the nation, including international locations depending on sport. Therefore, even though schools in other regions will not be sampled, the sample will include participants from various national and international locations. Furthermore, the research question addresses differences between academic and athletic performance and three theoretical and conceptual frameworks chosen as internal factors. Beyond these three frameworks, there may be other internally derived constructs that can be used to examine student-athlete performance in future studies.

Significance of the Study

Despite the significant amount of literature dedicated to understanding the performance of Division I student-athletes in higher education, research has not exhausted the examination of performance through the lens of internal factors. This study differentiates itself by the three psychological, developmental, and behavior-based frameworks chosen to reflect internal factors, which are largely unstudied with this population. This study also approaches performance by distinguishing
between “high” and “low” levels of academic and athletic performance. At best, much of the existing research examines the former or the latter, neglecting the complexity of the student-athlete role and performance expectations as both student and athlete.

In addition, academic and athletic successes have various definitions throughout the literature, some of which are unquantifiable until the end of an athlete’s career (e.g., NCAA graduation rates). This study assumed success is demarcated by high academic and athletic performance, identified by the study’s performance metrics, and provides an avenue to examine performance at any point in a career (excluding first-year student-athletes). This study also contributed a new athletic performance construct, supported by a panel of expert athletics scholars, as an innovative way to conceptualize athletic performance inclusive of all Division I student-athlete performers.

**Definition of Terms**

This section provides definitions of key terms used within this study. The first definitions, academic performance, athletic performance, and factors – including precollege, external, and internal – comprises definitions that have been determined for this study.

- **Academic performance:** For purposes of this study, academic performance is the cumulative GPA of participants, grouped into categories indicating “high” or “low” levels of performance.

- **Athletic performance:** For purposes of this study, athletic performance is a measure validated by expert athletic scholars, comprised of athletic performance items derived from the literature. These items provide a composite athletic performance score, grouped into categories indicating “high” or “low” levels of performance.

- **Factors:** The precollege, external, and internal factor themes have been assigned by the researcher based on best fit. It can be deliberated, for example, that faculty-student interaction (themed an external factor for this study) is actually motivated by internal factors, suggesting it is incorrectly assigned. The rationale for this current assignment is that while psychological characteristics may be the catalyst to a student interacting with faculty members, the student-faculty exchange involves both
the student and an external factor outside of individual control (faculty). This thought process coincides with other external factors that may have underlying internal influence, yet still require an exchange outside of student control, including coaches influence and group membership.

- Precollege factors are indicators students enter higher education institutions with, including high school GPA, standardized test scores, and high school coursework.
- External factors are outside individual control, such as the culture of an athletics department, policies, and scholarships. The term external factors is interchangeable with terms such as environmental variables used in other studies (Comeaux & Harrison, 2007).
- Internal factors may be controllable by the individual, such as personal qualities, traits, levels of motivation, and sport specific characteristics like self-efficacy.

- Division I FBS student-athletes: Students who are expected to maintain a high academic standard while competing at the highest level of collegiate sport. These students must meet and maintain academic eligibility benchmarks in order to practice and compete, while balancing countable athletic related activities (20 hours/week in season, eight hours/week out of season; NCAA, 2016c). Student-athletes are sometimes referred to as collegiate athletes, college athletes, high commitment athletes, and/or high-risk students.

- Division I: NCAA Division I member institutions that sponsor at least seven sports for men and women (or six for men and eight for women) that play 100 percent of the minimum number of contests against Division I opponents (for sports other than football and basketball), and do not exceed the maximum financial aid awards that are different for each sport (NCAA, 2015a).
  - Football Bowl Subdivision (FBS; formerly Division I-A): Division I is subdivided based on football sponsorship (NCAA, 2015a). Institutions participating in bowl games are a part of the Football Bowl Subdivision (FBS), as opposed to the NCAA-run Football Championship Subdivision (FCS), or schools that do not sponsor football. FBS only applies to football, and all other sports are simply considered Division I (NCAA, 2015a). FBS schools must meet
minimum attendance requirements (average 15,000 in actual or paid attendance per home game) at least once in a rolling two-year period (NCAA, 2015a).

- **Power Five Conferences**: The NCAA Division Board of Directors passed a new model granting the five major conferences (Southeastern Conference, Atlantic Coast Conference, Big Ten, Pacific-12, and Big 12) the authority to set their own rules to capitalize on the resources they have available for student-athletes (Hinton, 2014). These top five conferences have the autonomy to, for example, increase the value of athletic scholarships, allow access to agents, and set different parameters for recruiting trips, travel stipends for athletes’ families, academic standards, and coaching staff sizes (Hinton, 2014). Smaller schools that comprise the Group of Five Conference have the option to adopt the Power Five Conference legislation according to their capabilities (Hinton, 2014).

- **Group of Five Conferences**: All other FBS conferences not included in the Power Five: American Athletic Conference, Conference-USA, Mid-American Conference, Sun Belt Conference, and the Mountain West Conference.

- **Non-athletic peers**: All traditional and nontraditional students who do not participate in intercollegiate athletics, sometimes referred to as non-athletes. Many studies compare the academic performance of student-athletes to non-athletic peers (e.g., Aries, McCarthy, Salovey, & Banaji, 2004).

- **Non-revenue generating sports**: Sports that do not typically generate profit for their member institution. Commonly referred to as Olympic sports, this includes teams such as tennis, golf, softball, and soccer. Non-revenue generating sports can also be classified as either team or individual sports. Individual sports in this example include tennis and golf, where student-athletes compete individually despite an overall team score. Team sports in this example include softball and soccer, where outcomes are dependent upon the entire group. Non-revenue generating sports are sometimes referred to as low profile sports.
Revenue generating sports: Sports that typically generate profit for their member institution. Traditionally these sports are football, men’s basketball, and depending on the institution, sometimes baseball and women’s basketball (Ervin et al., 1985). Revenue generating sports are sometimes referred to as high profile sports. It is well documented that student-athletes from revenue generating sports typically underperform academically compared to peers from non-revenue generating sports (e.g., Maloney & McCormick, 1993).

Student-athlete high performance: Attaining a high level of academic and/or athletic performance as defined by the study’s performance metrics.

Student-athlete low performance: Attaining a low level of academic and/or athletic performance as defined by the study’s performance metrics.

Student-athlete success: Broadly regarded throughout the literature, the term has multiple interpretations. It can be derived from graduation rates and college GPA, roster spot or frequency of competition, post-season competition, positive aspects of athletic performance, motivation, and/or sport specific statistics. This study defines student-athlete success as attaining high academic and athletic performance as defined by the study’s performance metrics.

Student-athlete performance: For purposes of this study, this entails both the academic and athletic performance of student-athletes, the two areas in which they are most commonly evaluated.

Summary

This chapter offered a brief overview of the literature, theoretical frameworks, method, data source and collection, as well as limitations and delimitations for the proposed study. The following chapter provides a thorough analysis and presentation of the existing literature relevant to this study.
CHAPTER 2
LITERATURE REVIEW

The purpose of this chapter is to review the body of research that focuses on student-athlete academic and athletic performance. The majority of studies tend to examine academics or athletics independent of one another, rather than considering the whole person as both student and athlete. The scholarship to date aligns with three main themes: 1) precollege factors, 2) external factors, and 3) internal factors. This chapter will conclude with a literature review of the three psychological, developmental, and behavior-based theoretical and conceptual frameworks used as lenses to examine student-athlete performance within this study: 1) Mindset (Dweck, 2006), 2) Personal Growth Initiative (Robitschek, 1998), and 3) Student-Athlete Experiences (Cox et al., 2004).

The focus of the literature review is Division I student-athletes. The Division I student-athlete population is heterogeneous and includes differences in revenue generating/high-profile versus non-revenue generating/low-profile sports, race/ethnicity, and gender. In addition, the variability in subgroups is based on geographical location, athletic conference, and institutional type. Many of the existing studies focus on one of two populations, including student-athletes from revenue generating sports or all other student-athletes from non-revenue generating sports.

Student-Athlete Academic Performance

This section begins with a brief history of measuring student-athlete academic performance in higher education. The different ways scholars have measured student-athlete academic performance is then presented. The majority of this section provides a detailed look at precollege, external, and internal factors responsible for variations in academic performance.

History of Measuring Student-Athlete Academic Performance

The quantity of empirical research devoted to understanding variations in collegiate athlete’s academic performance is vast. Petr and McArdle (2012) conceptualize the history of academic performance research into four eras. The inception of the NCAA in 1906 to 1980 marks the first era, with little to no academic performance research, with the exception of the 1.6 minimum GPA rule in the 1960s.
The second era spans the 1980s and highlights significant changes in initial eligibility standards (Petr & McArdle, 2012). In the 1990s, the NCAA began to conduct analyses on the implications of academic policies on performance, entering the revolution of studying high school academic performance, initial eligibility standards, and overall college academic performance. Identified as the fourth era by Petr and McArdle (2012), in the 2000s research moved beyond high school academic characteristics to a broader focus on what happens to student-athletes once they are on higher education campuses. This shift resulted in research on factors contributing to variations in performance such as: support mechanisms, policies and incentives, student-athlete development programs, positive influences including interactions with faculty (Comeaux & Harrison, 2007), and performance deterrenchants such as athletic peer influence (P.A. Adler & P. Adler, 1991). Based on this research, academic performance has emerged as a critical indicator of student-athlete success in higher education.

**Measuring Student-Athlete Academic Performance**

Measuring student-athlete academic performance can be conceptualized through the lens of formative and summative evaluation literature. Evaluating learning and academic outcomes can take place through formative evaluation, which provides feedback and corrective actions at various stages of the learning process (Bloom, Hastings & Madaus, 1971). An example of formative evaluation would be measuring student-athlete performance incrementally using semester or cumulative GPAs (Gaston-Gayles, 2004). The perils of using indicators other than graduation can lead to various interpretations of success based on the chosen indicator (e.g., GPA, years of education, educational aspirations and expectations, post-graduation success).

Summative evaluation, however, is a single process that elicits a judgment encompassing all evidence to a given point (Scriven, 1967). The summative evaluation can be likened to graduation, the main data used for assessing student-athlete academic performance in higher education (Covell & Barr, 2010). Participation in college athletics increases motivation to earn a college degree and student-athletes graduate at a higher rate than their non-athletic peers (Gaston-Gayles, 2009). Data from the NCAA indicates more than eight out of 10, or 82 percent of student-athletes, are earning higher education degrees.
(NCAA, 2014a). Compared to the general student population, Pascarella and Terenzini (2005) found participation in intercollegiate athletics had a positive and significant effect on persistence to graduation for both revenue-generating and non-revenue generating sports.

Female student-athletes are more likely to be academically successful than male student-athletes (Dilley-Knowles et al., 2010; Gottschalk & Milton, 2010), and demonstrate similar performance when compared to their non-athletic peers (Eitzen, 1988). The Graduation Success Rate (GSR) for 2008 indicated that female athletes graduated at a rate of 87 percent, compared to the male athletes at 71 percent (Sander, 2008). In contrast, student-athletes in revenue-generating sports (i.e., football and men’s basketball) perform at lower levels academically, compared to student-athletes in other team sports as evidenced by GPA and graduation rates (Eitzen, 1988; Southall, Eckard, Nagel, & Hale, 2012). As examples, 2008 GSR data shows football and men’s basketball athletes graduated at 66 and 62 percent respectively, which was lower than student-athletes from other sports including lacrosse (88 percent), water polo (87 percent), and gymnastics (86 percent) (Sander, 2008). Student-athletes continue to dispel the jock stereotype and continually outperform non-athletic peers who enter college with similar SAT scores and demographic characteristics (Aries et al., 2004).

Graduation rates have been measured through different systems, including the Federal Graduation Rate (FGR), Graduation Success Rate (GSR), and the Academic Progress Rate (APR) initiative. The NCAA initially used the FGR, measuring the proportion of first-year, full-time student-athletes entering on institutional aid (athletics-based aid or otherwise) who graduated from that institution within six years (NCAA, 2015b). This rate does not account for students who transfer or graduate elsewhere, recognizing them as non-graduates at both the original and new institutions (NCAA, 2015b). Recognizing a need for a system which would take modern-day patterns into account, the NCAA created the GSR for Division I institutions in the early 2000s. The GSR differs from the FDR by a) holding colleges accountable for student-athletes who transfer into their school, and b) not penalizing colleges for student-athletes who transfer in good academic standing (NCAA, 2015b).

Arguably one of the most ambitious academic reform efforts to measure performance was the
implementation of the APR initiative, applied by the NCAA in 2003 and adjusted each year. APR emerged as a groundbreaking tool providing Division I presidents and chancellors with more immediate and accurate statistics on the academic success of student-athletes (NCAA, 2015a). Each student-athlete on athletic aid can earn a maximum of two points per semester for 1) maintaining academic eligibility and 2) staying enrolled at that institution (retention) (NCAA, 2015a). The premise of APR is that retention and NCAA continuing eligibility policies, or academic requirements that must be met to remain eligible to compete, are the fundamental building blocks for achieving graduation (LaForge & Hodge, 2011).

APR data is collected each year and teams must earn a 930 four-year average or a 940 average over the most recent two years to compete in NCAA post-season competition (NCAA, 2015b). Through banning post-season competition for teams not meeting the required APR benchmark, the NCAA sends an explicit message that competing for national championships coincides with achieving in the classroom (NCAA, 2015b). The penalties are on a team-by-team basis and are progressive in nature. The first penalty level reduces teams from 20 hours of practice per week over five days to 16 hours of practice per week over five days, with the additional time redistributed to academic activities (NCAA, 2015b). The second level of penalties increases the practice and competition reductions imposed in the first level during the non-championship season (NCAA, 2015b). The third and final level includes a menu of penalties encompassing coaching suspensions, financial aid reductions, and restricted NCAA membership (NCAA, 2015b).

There are limitations to summative evaluation metrics such as the FGR, GSR, and APR which capture graduation rates. Comeaux (2013) views the APR metric as deficient in evaluating the quality of educational experiences among student-athletes. A need exists to measure learning and personal development using valid and reliable tools (Comeaux & Harrison, 2011). These ideas represent a formative, incremental measure of academic performance. An example of a practical tool addressing this issue is the Career Transition Scorecard (CTS), an evidence-based framework contributing to organizational interventions benefiting student-athletes during their undergraduate careers and beyond (Comeaux, 2015). The CTS measures outcomes in the areas of access, retention, institutional receptivity,
excellence/high achievement, and engagement (Comeaux, 2015).

Other examples of valid and reliable metrics used to evaluate student-athlete academic performance include the Student Athletes’ Motivation Toward Sports and Academics Questionnaire (SAMSAQ; Gaston-Gayles, 2004) and the Non-Cognitive Questionnaire (Tracey & Sedlacek, 1985), substantiated in forthcoming sections. Other studies use a range of academic related questions to measure performance. Rankin et al.’s (2011) Academic Success Scale includes as an example, “I am performing up to my full academic potential” from Pascarella and Terenzini’s Institutional Integration Scale. The NCAA has also used individual metrics such as current academic standing, declared major, and individual academic awards in college to understand academic performance through the Growth, Opportunities, Aspirations, and Learning of Students in College (GOALS) survey (NCAA, 2012).

In summary, these sections speak to the collective effort among various stakeholders – including higher education institutions and scholars, athletics scholars, and the NCAA – to evaluate student-athlete academic performance in higher education. While the academic performance of all students in American higher education is well studied, the student-athlete subgroup is under a different spotlight due to their ambiguous place within the institution. Often referred to as “American higher education’s ‘peculiar institution’” (Thelin, 1994, p. 1), the college athletic enterprise requires students to strike a balance between participating as a collegiate athlete and fulfilling the goals of higher education, including positive academic gains and personal development (Gayles & Hu, 2009).

Universal student-athlete performance metrics, such as the APR and GSR graduation metrics, provide only a snapshot of performance at the end of an athlete’s career. This evaluation does not speak to the intricacies of high and low performers or explain how one student-athlete narrowly meets minimal eligibility requirements, while another athlete excels and garners recognition for his or her classroom performance. The forthcoming sections examine the “why” in variations in academic performance, under the themes of precollege factors, external factors outside of individual control, and internal factors that may be controllable by the individual.

**Academic Performance: Precollege Factors**
Students enter the higher education arena with attributes that directly or indirectly influence their college experiences (Comeaux & Harrison, 2007). These precollege characteristics (e.g., high school GPA, standardized test scores, high school coursework) are likely to predict certain behaviors in higher education (Astin, 1993a). In order to compete in intercollegiate athletics, first-year student-athletes must meet the initial academic eligibility criteria set by the NCAA, which is comprised of precollege characteristics (Heck & Takahashi, 2006). This is one way the NCAA supports its position that graduating from college is as important as athletic achievement, through ensuring incoming student-athletes are prepared for college coursework and earning a degree (NCAA, 2014b). Further evidence of this comes from Helman (1989), who states initial eligibility policies provide “standards that tether commercial athletics to the educational purposes of higher education” (p. 237). The forthcoming sections describe how initial eligibility policies, comprised of precollege factors, explain variations in student-athlete academic performance.

**GPA policies.** The NCAA’s Sanity Code, 1.600 rule and 2.0 rule are policies that have used GPA as a guide for athletic eligibility in higher education. The NCAA’s Sanity Code of 1946 was a GPA policy attempting to level the playing field in college athletics that ultimately failed due to non-enforcement (Covell & Barr, 2010). Following the demise of the Sanity Code of 1946, the 1.600 Rule of 1965 was implemented. This national standard required the incoming student-athlete to achieve a predicted first-year college GPA of at least 1.600 on a 4.0 scale prior to receiving athletic related aid. In addition, the student-athlete was required to maintain a 1.600 GPA in college to remain eligible for athletic related aid (Covell & Barr, 2001). As a result of this policy, the academic caliber of student-athletes increased, which institutions saw as a threat to meet demands for athletic and sport excellence (Covell & Barr, 2001). Specifically, critics cited this policy for racial discrimination and a loss of institutional autonomy as the pressure of a 1.600 GPA standard inhibited the admission of students of color whom were unable to meet this benchmark (Covell & Barr, 2010). Many attempts were made to denounce the 1.600 policy and eventually a weaker 2.0 rule was introduced in 1973. The 2.0 rule, proposed in the spirit of making recruiting easier, required student-athletes graduate from high school
with a 2.0 or C+ average, regardless of coursework, to be eligible for athletic related aid (Covell & Barr, 2010).

A study examining 20 factors predicting football student-athlete integration and success in higher education revealed 1) high school GPA and 2) repeating a year in high school were most important in predicting academic success (i.e., 2.0 or above) or failure (i.e., below a 2.0) of college football student-athletes (Lang et al., 1988). Furthermore, when pre-college characteristics were controlled, high school GPA was the most powerful predictor of college GPA for both African American and Caucasian student-athletes (Comeaux & Harrison, 2007). These findings also revealed African American student-athletes attained a lower high school GPA and were negatively affected in college at a greater rate than their Caucasian peers (Comeaux & Harrison, 2007). This was consistent with the findings of Sellers (1992), in that African American student-athletes enter college with lower high school grades and academic preparedness. Within Seller’s study (1992), high school GPA accounted for the largest variance in college GPA of both African American and Caucasian student-athletes. Sellers (1992) proposed GPA as a more accurate measure of performance, an accumulation of variables across time, versus an isolated standardized test susceptible to intervening variables such as test anxiety. Taken together, the findings of Lang et al. (1998), Comeaux and Harrison (2007), and Sellers (1992) reveal similar conclusions: high school GPA is a strong predictor of academic achievement, especially among African American and Caucasian football student-athletes.

**Standardized test scores and coursework.** The addition of standardized test scores and coursework policies to GPA benchmarks eventually became a staple in initial eligibility policies. Beginning in 1983, Proposition 48 was created as a result of demands for reforming athletics in postsecondary institutions (Covell & Barr, 2001). Inadequate academic standards were legitimate concerns, as graduation rates for student-athletes in high profile sports were increasingly unacceptable. Specifically, an NCAA study conducted from 1975 through 1980 revealed only 42.9 percent of Division I-A football student-athletes graduated (Covell & Barr, 2001). Proposition 48 stated student-athletes must graduate high school with a 2.0 or a C+ average in 11 core academic courses, while concurrently scoring
a combined 700 on the SAT or a 15 composite on the ACT to be eligible for participation and athletic related aid (Covell & Barr, 2010).

Proposition 48 served as the greatest push to resolve issues with graduation rates. Yet, similar to the Sanity Code of 1946, it could not account for how benchmarks disproportionately penalized African American student-athletes (Covell & Barr, 2001). Data from an NCAA sponsored study of 16,000 male and female student-athletes spanning 75 percent of Division I schools examining the impact of Proposition 48 revealed only 18 percent of African American male student-athletes admitted in 1977 and 1982 would have qualified for first-year participation, compared to 27 percent of African American females, 57 percent of Caucasian males, and 60 percent of Caucasian females (Falla, 1981). Responding to the active calls to reform Proposition 48, standards were lowered to a 1.9 GPA, 680 SAT, and 14 ACT in 1986. Proposition 42, enacted in 1988, demarcated the next policy change. Proposition 42 stated student-athletes must meet all standards of Proposition 48 without exception, closing the partial qualifier loophole where student-athletes who earned the GPA, but not test scores, qualified for athletic-related aid in exchange for losing one year of athletic eligibility (Covell & Barr, 2010). In 1992, the core course requirement was raised from 11 to 13 and the test score was changed to a sliding scale format – the higher the GPA, the lower the required test scores. One additional adjustment was approved in 2003, requiring the core course GPA be constructed from a total of 16 core courses in the areas of English (4 years), Mathematics (Algebra I or higher; 3 years), Natural or Physical Sciences (2 years), Social Science (2 years), additional courses in English/Mathematics/Natural or Physical Sciences (1 year), and additional courses in any of the abovementioned areas (including foreign language, philosophy, or non-doctrinal religion; 4 years) (Covell & Barr, 2010).

Reaching beyond the scope of initial eligibility policies focused solely on GPA, standardized test scores and high school coursework explain some of the variations in student-athlete academic performance. Combined with SAT scores, the more academic courses completed in high school, the better prepared student-athletes were for college-level work (Ervin et al., 1985). Another study validated ACT score and ethnicity as significant in predicting academic performance, in addition to academic motivation.
(Gaston-Gayles, 2004). Yet, the relationship between student-athlete high school standardized test scores and higher education performance remains inconclusive. Contrary to the findings of Ervin et al. (1985), SAT scores did not correlate with first-semester grades (Sedlacek & Adams-Gaston, 1992). The authors (1992) suggested SAT scores should not be used to predict first-year student-athlete success; instead, the non-cognitive variables that tested as meaningful in this study, as measured by Tracey and Sedlacek’s Non-Cognitive Questionnaire (1984), should be considered. This study will be reviewed in more depth in the internal academic factors portion of this literature review (Sedlacek & Adams-Gaston, 1992).

The evolution of initial eligibility policies span the Sanity Code, 1.600 Rule, 2.0 Rule, Proposition 48, Proposition 42, and present day policies involving a 16 core-course, GPA, and standardized test score requirements. These policies outline minimum precollege characteristics necessary to ensure incoming student-athletes are fit to handle the academic rigor of higher education. The GPA benchmark is the common denominator within these policies, which was found in numerous studies to predict success in higher education (Comeaux & Harrison, 2007; Lang et al., 1988). In addition, lower high school GPAs were found to negatively affect students in college (Comeaux & Harrison, 2007; Sellers, 1992). On the contrary, some studies found standardized test scores paired with high school academic courses (Ervin et al., 1985), or standardized test scores paired with motivation (Gaston-Gayles, 2004) to be better indicators of higher education success over GPA. Other studies indicated SAT scores did not correlate with first semester grades (Sedlacek & Adams-Gaston, 1992). Ultimately, precollege factors provide a projection of future academic outcomes. While these characteristics are insightful, they are unchanging unless intervention occurs during a student’s high school career.

**Academic Performance: External Factors**

The breadth of the literature focused on external factors associated with variations in student-athlete academic performance is abundant, accounting for the largest section among the precollege, external, and internal factor themes. From interaction with teammates to the culture of athletics departments, this section substantiates external factors outside of individual control that influence academic performance.
Engagement. The seminal works of Tinto (1987) and Astin (1993b) capture traditional student involvement with other students and faculty as important factors for student success in higher education. According to Tinto’s Theory of Student Involvement, “the individual plays a central role in determining the extent and nature of growth according to the quality of effort or involvement with the resources provided by the institution” (Pascarella & Terenzini, 1991, p. 51). Decades of research highlight the quality of faculty-student interaction and student integration on campus as central factors preventing attrition (Tinto, 1987). This research also reveals that informal student-faculty contact is valuable in retention practices (Pascarella & Terenzini, 1980). While these studies emphasize non student-athletes, similarities also exist with the student-athlete population.

The NCAA encourages an environment where the student-athlete and athletic program merge with the student body, inviting social bonds among student-athletes and non-athletes (NCAA, 2011). Building on Tinto and Astin’s work, Comeaux and Harrison (2007) examined the relationship between academic success and the energy student-athletes invest with individuals outside of the athletic department (e.g., higher education faculty, professional staff). Among revenue generating sports of football and men’s basketball, Comeaux and Harrison (2007) postulate academic performance is to some extent dependent on the specific nature of interaction with faculty. According to their study (2007), faculty encouragement for graduate school contributed favorably to Caucasian and African American student-athletes’ academic success as measured by GPA. However, only Caucasian student-athletes benefited academically from faculty who provided assistance with achieving professional goals (Comeaux & Harrison, 2007).

Yet variations in support affected Caucasian and African American student-athletes differently. In particular, conversations involving future career and professional aspirations had a positive influence on GPA, but for Caucasian student-athletes only (Comeaux & Harrison, 2007). The study also found faculty are more likely to assist Caucasian student-athletes with study skills (Comeaux & Harrison, 2007). The implications of these findings could result in measurable disadvantages for African American student-athletes compared to Caucasian peers. These findings occurred on predominately white campuses, where
feelings of isolation for African Americans are probable (Comeaux & Harrison, 2007). In another study, African Americans reported experiencing marginalization and not being taken seriously by Caucasian professors and traditional students (Perlmutter, 2003). This phenomenon influences the likelihood of African American students seeking guidance from off-campus support systems (Perlmutter, 2003), deemphasizing the underlying principles of Student Involvement Theory and the importance of building on-campus relationships.

Continuing with the theme of engagement, another study found that student-athletes interacted most frequently with other students, surpassing interaction with faculty, student organizations, and academic related activities. According to Gayles and Hu (2009), this interaction with students was influential to student-athlete self-identity, cultural attitudes, and gains in learning and communication. Ironically other data-driven research suggests athletic subcultures influence student-athletes to engage primarily with other student-athletes, instead of extending their interaction to non-student-athlete peers (Bowen & Levin, 2003; Shulman & Bowen, 2001).

Gayles and Hu (2009) also found differences in gender. Female student-athletes, compared to male student-athletes, were more likely to engage with non-athlete peers (Gayles & Hu, 2009). This conclusion parallels other research which demonstrates that female student-athletes are more likely than male student-athletes to find balance in terms of: 1) academic and athletic motivation (Gaston-Gayles, 2005), and 2) academic, athletic, and social roles (Simons et al., 1999).

On the contrary, through the guise of Student Involvement Theory, the quantity and quality of psychological and physical energy devoted to the college experience is thought to be compromised for student-athletes (Astin, 1984). This is due to circumstances such as long practice hours, travel to athletic competitions, and separate living accommodations from non-athletic peers (Austin, 1984). As a result, students involved in athletic activities show smaller than average increases in political liberalism, religious apostasy, and artistic and business interests which all appear to be due to isolation from peer groups (Astin, 1984).
Bureaucratic mentality and coaching impact on outcomes. Another external structure influential to student-athlete performance is known in organizational literature as the bureaucratic mentality. Beyer and Hannah’s work (2000) illustrated the values of a bureaucratic orientation and how they crystallize between student-athletes and athletics staff. Specifically, student-athletes submit to the appropriateness of hierarchy and were shown to subordinate to authority. Sage (1985) confirmed this mentality, stating that along with student-athlete acceptance comes relatively unquestioning obedience. A common thread throughout the literature is the strong influence coaches have on student-athlete outcomes, including spoken and unspoken messages affecting how academics and athletics are prioritized.

P.A. Adler and P. Adler (1988) note student-athletes are intensely loyal to their coaches by virtue of their position of authority and power. In the 2011 NCAA Study of College Outcomes and Recent Experiences (SCORE) study, insufficient academic support from a coach was a factor reported by student-athletes who did not graduate (NCAA, 2011). In addition, student-athletes believed, either correctly or incorrectly, that choosing academic commitments (e.g., attending a study group during practice time) over athletic commitments would impede athletic playing time and subject them to penalization from coaches for choosing the former (Simons et al., 1999).

Group membership. Collectivism is also an organizational principle linking group membership to individual student-athlete performance. The team-based functionality of intercollegiate athletics is grounded in collectivism and moderates the individualism prevalent in United States society (Beyer & Hannah, 2000). While individual achievement influences athletes to strive towards individual excellence, the collectivist orientation accompanying a team suggests group gains outweigh individual gains (Beyer and Hannah, 2000). Student-athletes note being a part of a team means compromising for teammates, as well as performing to the best of one’s abilities due to the team’s shared goals (Kimball, 2007). The impact of group membership on various outcomes is revealed in the following sections.

Group membership and stereotype threat. Stereotype threat occurs when an individual is presented with situations carrying the risk of confirming negative stereotypes connected to his or her
group identity (Bastedo, 2012). Student-athletes combat negative stereotypes from faculty, traditional students, and higher education personnel that influence academic performance and standards. For instance, Engstrom and Sedlacek (1991) uncovered negative stereotypes faculty and students have towards student-athletes. Findings by Sailes (1993) demonstrated stereotypes are especially prevalent against African American student-athletes. Specifically, Caucasian and male students believed African American student-athletes were a) not as academically prepared as the average college student, b) received lower grades than Caucasian athletes, and c) were not as intelligent as Caucasian student-athletes (Sailes, 1993). In a more recent study conducted by Aries et al. (2004), student-athletes experienced group membership as an obstacle to academic performance compared to non-athletes, especially with respect to being taken seriously by professors and earning high grades. In addition to academic performance, student-athletes held lower perceptions of themselves in terms of intelligence, intellect, and artistic or creative abilities compared to non-athletic peers (Aries et al., 2004). Student-athletes are also thought of as more likely to cheat, to be the recipients of special privileges, and to experience leniency in grading to maintain continuing eligibility standards (Eitzen, 2009). A study evaluating high achieving African American student-athletes from academically rigorous institutions within the Pacific 12 conference (hereafter Pac-12) resulted in four major academic themes: 1) I had to prove I’m worthy, 2) I’m a perceived threat to society, 3) It’s about time management, and 4) It’s about pride and hard work (Martin, Harrison, Stone, & Lawrence, 2010). Participants responded favorably to these stereotypes with proactive strategies and coping mechanisms (Martin et al., 2010). The authors provided implications for policy and practice, including increased involvement from athletic directors, recruiting and retaining African American athletic staff, and greater accountability among colleges and head coaches to recruit students who would be a good institutional fit (Martin et al., 2010).

Research on stereotype or identity threat (Steele, 1997; Steele, Spencer, & Aronson, 2002) reveals “when a negative stereotype about a group becomes salient as the criteria for evaluating performance, individual group members may become concerned their performance will confirm the validity of the negative stereotype” (Harrison et al., 2009, p. 80). This adds an additional psychological
burden to the task at hand, inhibiting the possibility of performing at full capacity (Harrison et al., 2009). An example of this phenomenon emerged in a study measuring academic performance of female college student-athletes. Specifically, academic performance suffered the most when females were primed with “scholar-athlete” terminology, meaning athletic identity was tied directly to their academic identity in the classroom (Harrison et al., 2009). While not as significant, academic performance was also compromised on test performance measuring verbal ability when subtle reminders of athletic identity were prominent in a classroom context (Harrison et al., 2009). Even when controlling for effort, “the threat of confirming the negative academic stereotype impacted the overall test taking strategy employed by the female athletes” (2009, p. 87).

Conversely, the academic performance of male collegiate student-athletes was not affected when primed for their athletic identity (Harrison et al., 2009). In fact, males performed significantly better on difficult test items when primed solely for their athletic identity, compared to being primed with the “scholar-athlete” or stereotype-neutral identity (Harrison et al., 2009). These findings suggest males have a positive association with athletic identity, serving as a self-affirming prophecy when executing academic tasks. The following sections provide further detail on how group membership affects male and female student-athletes differently.

**Group membership and male student-athlete academic performance.** Research suggests the effects of college vary based on conditional factors such as ethnicity, academic ability, socioeconomic status and gender (Terenzini & Pascarella, 1991). Longitudinal data focusing on men’s basketball student-athletes showed how identification with a collective team interferes with individual academic performance (Terenzini & Pascarella, 1991). Student-athletes entered higher education with idealistic academic experiences, which later imploded based on various structural factors: internal cohesion with peer subculture (other student-athletes) due to likeness and self-identification, commitment to the athletic role and overemphasis on professional sports, and geographical isolation due to separate dormitory structure and athletic related demands (P. Adler & P.A. Adler, 1985). As a result, pragmatic adjustments were made by student-athletes throughout their career, including abandoning initial academic aspirations
and accepting diminished performance overall (P. Adler & P.A. Adler, 1985). P.A Adler and P. Adler (1991) followed up on this research and staying true to form found that academic performance was compromised when pressure was imposed to strengthen athletic commitments at the expense of academic pursuits. Pascarella, Bohr, Nora, and Terenzini (1995) also proposed that participation and dedication to sport could take precedence over academics, as evidenced by male student-athletes’ GPA recording the lowest of all comparison groups, followed by female non-athletes. The comparison groups encompassed male and female student-athletes as well as female non-athletes. The authors suggest this is evidence of a subculture that may not always place value on academics (Pascarella et al., 1995).

**Group membership and female student-athlete academic performance.** Meyer (1990) followed up on the 1985 study performed by P. Adler and P.A. Adler (hereafter Adler study) by expanding the initial population to encompass female scholarship student-athlete academic expectations, attitudes, and experiences. The study mirrored findings of the Adler study in that females also entered higher education with positive expectations towards degree attainment, shared optimism about the likelihood of graduating, viewed a college education as imperative for future success, and expressed zero possibility of becoming ineligible due to low grades (Meyer, 1990). One major difference between the two studies was the degree to which female student-athletes persisted in their ideals of valuing education and taking their studies seriously, versus the former where men lost interest in school after the first year (Meyer, 1990). Finally, female student-athletes felt athletic participation was a hindrance to their academic pursuits, whereas the men in the Adler study reported athletic participation dominated all aspects of their higher education experience (Meyer, 1990). Both sets of student-athletes demonstrated idealistic expectations, with women more likely to actualize these expectations (Meyer, 1990). Another sizeable difference is the degree in which student-athletes believed they would receive preferential treatment because of their athletic team status. Specifically, females within the Adler study hoped they would receive the same treatment as non-athlete peers, whereas the men in the Adler study counted on additional pampering and care (Meyer, 1990).
Athletic department group membership. When expanding beyond team affiliation, there is evidence collective athletic department success impacts student-athlete academic performance. Southall et al. (2015) determined African American student-athletes from the most successful FBS football and men’s basketball programs graduate at lower rates compared to male peers. Another study revealed a high degree of athletic department success, measured by several variables that proxy athletic success, affected the relative difference in graduation rates of student-athletes as well as non-athletes (Rishe, 2003). The variables comprising athletic success in Rishe’s (2003) study included Director’s Cup points, men’s basketball and football ratings, financial profit, measures of athletic prowess, and institutional location. In addition, the success of athletics mitigates the relative academic success of the group facing the greatest expectation to succeed athletically and have the most to gain from athletic achievements (Rishe, 2003). Male student-athletes as a subgroup face greater pressures to succeed athletically (Rishe, 2003). This is due to opportunities beyond amateur athletics and increased financial and media pressure compared to female student-athletes (Rishe, 2003). These examples support the power of collectivism among teams and subgroups of student-athletes, playing an influential role on individual attitudes, beliefs, and behaviors.

Bastedo (2012) identifies key indicators of organizational strategy, including gaining a competitive edge, producing favorable outcomes, and defending against various threats. Whether overtly identified or not, athletic departments employ strategies that have ties to various student-athlete outcomes. Specifically, Miles and Snow’s (1978) typology of strategic types (prospectors, defenders, analyzers, and reactors) was used to identify athletic department strategies and relationship to: a) athletic achievement, b) student-athlete graduation rates, and c) compliance with Title IX of the 1972 Educational Amendments (Cunningham, 2002). The defender and prospector types are on different ends of a strategy continuum; between these two types lie the moderator and analyzer, the latter a happy medium between defender and prospector (Cunningham, 2002). The majority of athletic departments employed an analyzer strategy, focused on minimizing opportunities for profit (Cunningham, 2002; Miles & Snow, 1978). Prospector and defender departments had significantly higher graduation rates than analyzers (Cunningham, 2002).
The defender is characterized as the most conservative and predictable of the four types and was most compliant with Title IX (Cunningham, 2002). Based on these findings, the structure of athletic departments can be influential in determining academic performance outcomes.

**In-season vs. out-of-season variations.** Variations in semester GPA based on in-season or out-of-season competition is a topic that has garnered conversation anecdotally; however few studies exist to help understand this phenomena. Scott et al. (2008) suggest the common assumption that student-athletes perform better in-season, because the structured nature of in-season should positively influence academic endeavors. Although the in-season/out-of-season topic falls under the category of an external barrier all college athletes face, this phenomena affects student-athlete performance differently. There is also evidence of lower GPAs in-season for revenue generating athletes, specifically from football and men’s basketball (Maloney & McCormick, 1993). The same did not hold true for non-revenue generating sports. When accounting for academic backgrounds, non-revenue athletes performed the same as non-athletes both in and out of season (Maloney & McCormick, 1993). The authors (1993) state conclusively that student-athletes from revenue sports (football and men’s basketball) perform .01 of a grade point worse each semester versus non-revenue athletes and non-athletes.

In a follow-up study, student-athletes from all sports averaged an in-season GPA 0.03 units lower than out-of-season GPA (Scott et al., 2008). This small yet statistically significant effect was stronger for males (0.05 GPA units lower in-season; 2.67 vs. 2.72), over females (0.01 GPA units lower in-season; 3.08 vs. 3.09) (Scott et al., 2008). The authors (2008) also found statistically significant differences in credit hours earned, with 0.4 fewer credits in-season (0.5 among males and 0.3 among females). This study mirrors the results of Maloney and McCormick’s (1993) study in that high-profile sports of baseball, football, and basketball performed lower academically in-season (Scott et al., 2008). In addition to these sports, student-athletes involved in men’s soccer, softball and women’s volleyball earned significantly lower in-season GPAs, which differed from the 1993 study (Scott et al., 2008). These six sports, with the exception of men’s basketball, have competitive seasons that are limited to one semester or the other – insinuating a season spanning one semester is more taxing than a season dispersed over an
Scholarship support. Principal-Agent Theory (PAT) derived from organizational theory literature, assumes a principal enters into an explicit or implicit contractual relationship with an agent to provide services (Lane, 2013). These contracts, according to PAT, assume interactions are either behavior-based or outcome-based (Lane, 2013). Using the PAT lens, student-athletes (thought of as agents in this example) enter outcome-based contracts (i.e., athletic aid/scholarship) with higher education institutions (thought of as the principal in this example), and are measured by output or an indicator of performance (Lane, 2013). The performance indicator in these cases could include retention, academic performance (e.g., cumulative GPA) and ultimately graduation.

More than 150,000 student-athletes receive 2.7 billion dollars in athletic scholarships each year from NCAA member colleges and universities (NCAA, 2014b). These scholarships afford Division-I student-athletes access to higher education while competing at the highest level of amateur athletics. Using the APR metric described in the policy portion of this paper, data from eight mid-major Division-I institutions encompassing 12,980 observations reported scholarship support, gender, and sport type (individual or team sport) as significant predictors of student-athlete retention (LeCrom et al., 2009). When the variables were analyzed individually however, results varied. LeCrom et al. (2009) revealed scholarship support alone was not significantly related to retention. Gender emerged as a significant predictor of retention, where females were retained at a higher rate than male student-athletes – a finding consistent throughout the literature (Dilley-Knowles et al., 2010; Gottschalk & Milton, 2010; Rishe, 2003). Finally, student-athletes from individual sports (e.g., golf, tennis) had higher rates of retention than team sports (e.g., baseball, football, soccer).

In addition to examining the effect of scholarship support on various academic success variables, the relationship between scholarship support and level of extrinsic or intrinsic motivation among student-
athletes has been studied. Snyder (1985) discussed extrinsic rewards (e.g., top grades, receiving a grant or scholarship) as validating to the student-athlete with a high commitment to the academic role.

Maximizing these extrinsic gratifications can support a student-athlete’s commitment to the academic role (Snyder, 1985). The work of Kingston et al. (2006) revealed that scholarship student-athletes displayed higher levels of extrinsic motivation, suggesting scholarships can actually undermine intrinsic motivation altogether.

Overall the findings described in this section can be interpreted to suggest that scholarship support alone is not a factor related to retention (LeCrom et al., 2009). When examined against non-scholarship student-athletes, scholarship support is associated with graduating in fewer semesters (Rubin & Rosser, 2014), lower grade point averages (Purdy et al., 1982; Rubin & Rosser, 2014), and was linked to higher levels of extrinsic motivation in terms of academic performance (Kingston et al., 2006; Rubin & Rosser, 2014). The role of intrinsic motivation and academic performance is examined in following sections.

Rubin and Rosser (2014) compared academic success between scholarship and non-scholarship student-athletes, viewing athletic scholarships as an extrinsic reward. Academic performance was measured using cumulative GPA, while time-to-degree completion was measured by semesters needed to graduate. The findings suggested an inverse relationship between academic performance and time-to-degree variables based on scholarship status (Rubin & Rosser, 2014). Specifically, non-scholarship student-athletes earned higher GPAs than scholarship student-athletes, yet scholarship student-athletes graduated in fewer semesters than non-scholarship student-athletes (Rubin & Rosser, 2014). This research supports earlier findings by Purdy et al. (1982) who discovered that student-athletes receiving athletic scholarships earned lower grades. Contrary to the previously mentioned studies, Milton et al. (2012) found student-athletes who were awarded an athletic scholarship were more likely to have a GPA of 3.0 or above than student-athletes who were not awarded athletic scholarship. Gender differences also emerged, revealing female scholarship student-athletes were more likely to have a 3.0 or above than male scholarship student-athletes (Milton et al., 2012). Moreover, the work of Kingston et al. (2006)
demonstrated that scholarship student-athletes displayed higher levels of extrinsic motivation. The authors suggested that scholarships can actually undermine intrinsic motivation altogether (Kingston et al., 2006).

Overall, student-athletes bound in contract by athletic scholarships increased their output with respect to graduating in fewer semesters (Rubin & Rosser, 2014) and displayed higher levels of extrinsic motivation towards academic performance (Kingston et al., 2006; Rubin & Rosser, 2014). They did not increase their output compared to non-scholarship student-athletes in terms of retention (LeCrom et al., 2009) and graduation rates (Purdy et al., 1982). Differences in GPA varied; in some cases scholarship student-athletes earned lower GPAs compared to non-scholarship student-athletes (Purdy et al., 1982; Rubin & Rosser, 2014) and in another cases scholarship student-athletes outperformed (more likely to carry a 3.0 GPA) their non-scholarship peers (Milton et al., 2012).

Academic advising support. In 1991, the NCAA implemented Bylaw 16.3.1.1, mandating Division I institutions provide general academic support counseling and tutorial services to all student-athletes. Academic support units have an extensive list of responsibilities, including monitoring initial and continuing eligibility standards, providing various mechanisms of academic support, and orchestrating personal growth programming aimed at developing student-athletes as individuals (Carodine et al., 2001). Using the PAT framework referenced in scholarship support, the athletic academic advising unit resembles a behavior-based contract (versus outcome based) between the student-athlete (agent) and the academic advising unit (principal). Specific behaviors include student-athletes using academic advising units as a mechanism of support and growth, as opposed to relying on the unit to maintain athletic eligibility.

Findings of a study examining student-athlete motivation to use academic support services revealed that minorities in revenue-generating sports of football and men’s basketball rely on athletic academic support units beyond their purpose of academic persistence and graduation, particularly to maintain athletic eligibility (Ridpath, 2010). In this regard, academic support units for athletes serve as a mechanism for eligibility maintenance instead of true academic advisement and support (Ridpath, 2010; Gurney & Southall, 2013). Student-athletes who focus on maintaining athletic eligibility over embracing
an academic role tend to focus on maintaining the minimum NCAA requirements and share a common ‘C gets a degree’ mentality (Simons et al., 1999). This approach supports the underachieving mindset among male student-athletes in revenue generating sports detailed in previously mentioned studies (P. Adler & P.A. Adler, 1985; P.A. Adler & P. Adler, 1991). Academic advising units are under considerable pressure to monitor initial and continuing eligibility guidelines. The propensity to focus on eligibility requirements over educational outcomes was explained by Comeaux (2012), with his study revealing less than three percent of academic support units engage in data-driven approaches to assess actual student learning, relying primarily on anecdotal information.

**Campus climate.** The perceptions of campus climate influence both learning and developmental outcomes for college students (Pascarella & Terenzini, 2005). The impact of campus climate and academic success was examined through a comprehensive study focused on over 4,000 Division-I student-athletes (Rankin et al., 2011). The 2011 Student-Athlete Climate Study (SACS), supported by the NCAA, explored the relationships between student-athletes’ experiences and perceptions of climate across various outcomes. Within this study, climate was defined as “current attitudes, behaviors, and standards of employees and students that concern the access for, inclusion of, and level of respect for individual and group needs, abilities, and potential” (Rankin & Reason, 2008, p. 264). The authors (2011) found academic success was positively influenced by five climate variables, in order of influence: 1) faculty-student interaction, 2) athletic personnel interaction, 3) perceptions of climate, 4) personal conflict with teammate diversity, and 5) perceptions of respect. The strongest of the 11 significant relationships depicted in the model was between faculty-student interaction and academic success, suggesting interactions with faculty will yield the largest pay-off in student-athlete academic outcomes (Rankin et al., 2011). Differences between subgroups were also reported, which further speaks to the diversity among student-athletes. According to the study, African American student-athletes reported lower levels of academic success relative to their Caucasian student-athlete peers (Rankin et al., 2011). African American student-athletes also reported experiencing a negative climate compared to Caucasian student-athletes, including negative perceptions of respect and climate (Rankin et al., 2011). This compounds the lower
levels of academic success frequently reported among this subgroup within the literature (Rankin et al., 2011). Differences between genders exist and align with previously reported research. Specifically, female student-athletes tend to report greater levels of academic success, with the most influential variable presenting itself as perception of respect (Rankin et al, 2011).

**Policy implications.** There is evidence that initial eligibility policies have served their purpose. Graduation rates for all student-athletes have risen considerably since 1986, a byproduct of the NCAA’s academic requirements (Suggs, 1999). Specifically, 57 percent of first-year student-athletes entering Division I universities in 1991 graduated within six years, compared to 52 percent prior to the implementation of SAT and ACT requirements. African American student-athletes’ graduation percentage increased to 44 percent within six years, previously at 36 percent prior to the NCAA implementing SAT and ACT requirements through Proposition 48 (Suggs, 1999). An additional study drawing on one institution found students who were admitted under conditional circumstances with ACT scores below the Proposition 48 standard (ACT 15 or SAT 700) were likely to have difficulty succeeding academically (Hood, Craig, & Ferguson, 1992).

Heck and Takahashi (2006) conducted a study from a pool of all 105 Division I-A football programs, examining the number of first-year student-athletes and percentage of graduating first-year student-athletes in years before and after Proposition 48 was introduced. The researchers found first-year graduation rates increased slightly for the entire set of schools before the policy was introduced (46.14 percent to 47.77 percent) and graduation rates continued to rise and peak to about 55.6 percent before declining the last few years. This particular policy outcome showed only a partial relationship between initial eligibility standards and improved graduation rates among Division IA football student-athletes (Heck & Takahashi, 2006).

While initial eligibility supports the graduation mission, it cannot fully safeguard against student-athletes who meet the minimum threshold but are still underprepared. Graduation rates published by the NCAA have consistently shown student-athletes entering college with lower levels of academic achievement tend to have lower grades during their first year in higher education (Gaston-Gayles, 2009).
The interesting phenomenon is that admitting student-athletes with underwhelming academic credentials is not an isolated event. Specifically, 84 percent of African American student-athletes within the study scored below 700 on the SAT, yet were admitted to a higher education institution where the average SAT score exceeded 1000 (Ervin et al., 1985). According to the study (1985), these student-athletes were very deficient in academic skills; remediation within one academic year was termed ‘virtually impossible’ in an institution where the average SAT score exceeds 1000. This speaks to the issues that can arise when student-athletes meet minimum NCAA initial eligibility requirements, yet are admitted to an institution with insufficient academic credentials.

**Athletic participation implications.** Student-athletes endure numerous stressors specific to intercollegiate athletic participation that can affect performance. The stressors that accompany student-athletes could technically be included within this section on external factors. In particular, mental and physical exhaustion are noted as significant challenges student-athletes face on a consistent basis (Caroline et al., 2001). Carodine et al. (2001) cite fatigue as a negative factor in academic studies, especially in terms of difficulty concentrating. These issues also surface during formal class periods, which can interfere with information processing and meaningful learning (Carodine et al., 2001). Many student-athletes cope with both major and minor athletic-related injuries, resulting in additional time away from academics while engaged in rehabilitation (Carodine et al., 2001). Etzel et al. (2006) substantiate findings of numerous authors related to the prevalence of alcohol use among student-athletes citing excessive pressure and anxiety. Student-athletes share numerous challenges that can potentially affect academic and/or athletic performance, including mental and physical exhaustion, time constraints, and other lifestyle concerns. These issues are worth mentioning even though the will not be addressed in the current study.

**External academic factors summary.** Factors outside of student-athlete control that influence academic performance are summarized as follows. Meaningful contact and interaction with faculty tops the list of factors contributing positively to academic performance (Pascarella & Terenzini, 1980; Rankin et al., 2011). Interaction with peers outside of the athletic department leads to increases in academic
related skills (Gayles & Hu, 2009) and a greater balance between academic and athletic motivation (Gaston-Gayles, 2005). Isolating athletic cultures that perpetuate less energy and time devoted to academics appear detrimental to academic performance (P. Adler & P. A. Adler, 1985; P. A. Adler & P. Adler, 1991; Meyer, 1990) and various secondary higher education gains (e.g., artistic and business interests) (Astin, 1984). These aforementioned findings tend to vary based on gender and race. Additional external factors affecting academic outcomes are coaches’ influence (Simons et al., 1999), athletic department successes and strategy (Rishe, 2003; Cunningham, 2002), and perceptions of climate and respect (Rankin et al., 2011). More stringent academic policies have positively affected graduation rates over time (Suggs, 1999; Heck & Takahashi, 2006) and students entering with lower levels of achievement tend to earn lower grades their first year in college (Gaston-Gayles, 2009).

The competition season is also a factor in academic performance. Specifically, student-athletes in-season from revenue generating sports tend to earn lower GPAs (Scott et al., 2008). However, athletes from non-revenue sports tend to perform the same regardless of season (Maloney & McCormick 1993) with the exception of some teams with competitive seasons limited to one semester (Scott et al., 2008). Group membership and various negative stereotypes from students and faculty, including not taken seriously by professors (Aries et al., 2004) hinders male and female student-athletes alike (Eitzen, 2009; Harrison et al., 2009; Martin et al., 2010). Scholarship support equates to students graduating in fewer semesters (Rubin & Rosser, 2014), and leads to greater retention of female student-athletes (Dilley-Knowles et al., 2010; Gottschalk & Milton, 2010; LeCrom et al., 2009) and athletes from individual sports (Rishe, 2003). Scholarship support also leads to increased levels of extrinsic motivation (Kingston et al., 2006; Rubin & Rosser, 2014).

**Academic Performance: Internal Factors**

The following sections examine the relationship between various factors that may be within student control and variations in academic performance. The majority of internal characteristic research encompasses student motivation, student-athlete role identification (i.e., academic and athletic identity),
and internal qualities student-athletes possess (e.g., personality) and their effect on academic performance.

**Motivation.** Motivation is a salient factor in understanding variations in academic performance among student-athletes. Over several decades, advancements in understanding motivation have evolved, including attribution theory (Weiner, 1986), self-efficacy theory (Bandura, 1977), expectancy-value theory (Atkinson, 1957), and self-determination theory (Deci, Vallerand, Pelletier, & Ryan, 1991; Ryan & Deci, 2000). Woodruff and Schallert (2008), for example, conducted a qualitative grounded theory study interested in the relationship between student-athlete perceptions of experiences and motivational processes influencing emotions, cognitions, and behaviors. The researchers concluded that a change in overall motivation – influenced by positive experiences with professors, students, and earning good grades – facilitated a positive change in internalized academic motivation and subsequently overall sense of self (Woodruff & Schallert, 2008). Furthermore, Sellers (1992) found that lower levels of academic preparedness did not influence levels of academic motivation, despite the literature on African American student-athletes entering college underprepared. Within this study, no significant conclusions were drawn between African American and Caucasian student-athletes in terms of number of hours spent studying and desire to earn a college degree (Sellers, 1992).

A stronger commitment to the athletic role emerged as a salient theme among student-athletes with lower levels of academic performance. Simons et al. (1999) determined failure-avoiders and failure-acceptors were more committed to the athletic role and performed at a lower level academically than peers identifying as success-oriented and over-strivers (Simons et al., 1999). On the contrary, success-oriented student-athletes and over-strivers demonstrated a stronger sense of self-worth, were intrinsically motivated, believed in their ability to compete academically, and possessed a repertoire of study skills (Simons et al., 1999). The latter group, categorized as success-oriented or over-strivers, attained the highest levels of academic performance. Differences in race and gender revealed a greater percentage of failure-avoiders and fewer success-oriented African American student-athletes compared to non-African American student-athletes.
American student-athletes (Simons et al., 1999). More males appeared to be failure-avoiders compared to females (Simons et al., 1999).

In addition, Snyder (1985) used a conceptual framework to describe the various athletic and academic role commitments, as well as strains faced between student and athlete roles. Organized into four types, Types II and III are described as individuals who commit and receive benefits from only one of two areas (academics or athletics). Type II athletes, labeled as pure scholar, may derive their satisfaction from the ‘love of learning’ and perceive commitment to the academic role as both fulfilling and rewarding (Snyder, 1985). In addition to ACT score and ethnicity, Gaston-Gayles (2004) determined that motivation towards academic related tasks was influential in predicting academic performance. Caucasian student-athletes with higher ACT scores and greater academic motivation earned higher GPAs over minority students with lower ACT scores and lower academic motivation (Gaston-Gayles, 2004). These findings support the differences substantiated in the literature with respect to race/ethnicity and differences in relative academic performance. This study (2004) also supports the idea that academic motivation, regardless of athletic motivation, is critical in determining academic success among student-athletes.

Another study measuring academic and athletic motivation among collegiate athletes identified females as the most balanced group with respect to academic and athletic motivation (Gaston-Gayles, 2005). Female student-athletes also demonstrated greater motivation toward academic-related tasks over athletic-related tasks (Gaston-Gayles, 2005). On the opposite side of the spectrum, nonminority student-athletes had greater career athletic motivation compared to academic motivation (Gaston-Gayles, 2005). Gaston-Gayles (2005) also concluded that student-athletes from revenue generating sports had higher athletic motivation scores relative to academic motivation. In summary, nonminority and student-athletes who participate in revenue generating sports displayed a greater imbalance between academic and athletic motivation, which affected the time and effort expended to be successful in a given task domain (Gaston-Gayles, 2005).
Although research indicates that student-athletes graduate at a higher rate than their non-athletic peers, they are not immune to difficult college adjustments (Melendez, 2006). Melendez (2006) used the Athletic Identity Measurement Scale (AIMS) to test a student-athlete’s athletic identity relative to their academic and personal-emotional adjustments. Academic adjustment was defined as coping with various educational demands and personal-emotional adjustment indicated a student’s intra-psychic state (i.e., internal psychological processes) during adjustment to college (Melendez, 2010). A larger athletic identity resulted in an inverse relationship between academic adjustment and personal-emotional adjustment (Melendez, 2006). The findings of this study demonstrate how a strong connection with athletic identity can hinder the adjustment to higher education and balancing educational priorities.

**Non-cognitive measures.** Tracey and Sedlacek (1984) developed the Non-Cognitive Questionnaire (NCQ) assessing eight non-cognitive variables and their relationship to academic success. The NCQ consists of 23 items and includes categorical items addressing educational aspirations, expectations regarding college and self-assessment, and information on present goals, past accomplishments, and other activities (Tracey & Sedlacek, 1984). Using this metric, Tracey and Sedlacek (1985) found that individual attitudes and perceptions pre-higher education helped predict academic success in college for Caucasian and African American students (Tracey & Sedlacek, 1985). The eight NCQ dimensions assessed were predictive of GPAs for both groups of students, especially when used in conjunction with SAT scores (Tracey & Sedlacek, 1985).

The results underscored by Tracey and Sedlacek (1984, 1985, 1987) were also supported with the student-athlete population. In a study conducted with African American student-athletes, Tracey and Sedlacek (1987) reported that persistence after three semesters was related to non-cognitive variables including “having a positive self-concept, a realistic self-appraisal (seeing extra effort as necessary), preferring long-range goals to more short-term immediate needs, and having some leadership experience” (Tracey & Sedlacek, 1987, p. 345). Tracey and Sedlacek (1987) surmise that those who persist have strong coping abilities. Therefore, coping is more indicative of persistence over traditional precollege variables (e.g., high school GPA, standardized test scores) used to predict academic performance in
higher education. Within this study, non-cognitive dimensions had minimal effect on persistence among Caucasian student-athletes; academic ability emerged as the prevailing quality to predict persistence (Tracey & Sedlacek, 1987).

Further investigations of non-cognitive variables measured by the NCQ are also documented. Specifically, Sedlacek and Adams-Gaston (1992) investigated the relationship between non-cognitive variables and academic performance among first-year student-athletes. The results of the NCQ correlated with first-semester grades for student-athletes (Sedlacek & Adams-Gaston, 1992). The meaningful non-cognitive variables that emerged included a strong support person, community involvement, and positive self-concept, which collectively predicted academic performance during the first year of higher education (Sedlacek & Adams-Gaston, 1992). The authors posit that those who succeed have both individual and community support, suggesting they look to themselves as well as parents, teachers, teammates and coaches for reinforcement (Sedlacek & Adams-Gaston, 1992). Another study found particular psychosocial variables that led to predicting performance of nonminority football student-athletes. (Petrie & Russell, 1995). Higher levels of stress, measured by the 69-item Life Events Survey for Collegiate Athletes (Petrie, 1992) and competitive trait anxiety, measured by a 15-item Sport Competition Anxiety Test (Martens, 1977) was associated with lower GPAs (Petrie & Russell, 1995). Contrary to this finding, the relationship between psychosocial variables and academic stress were unrelated to academic performance for nonminority football student-athletes (Petrie & Russell, 1995). Instead, academic variables, and specifically ACT, best predicted semester GPA (Petrie & Russell, 1995). This finding contradicts previously mentioned research on non-significant relationships between ACT and SAT scores and subsequent college grades (e.g., Sedlacek & Adams-Gaston, 1992).

Ting (2009) conducted a study assessing non-cognitive factors and standardized test scores and the impact on academic performance and persistence among first-year student-athletes. Variables from the NCQ scale (Tracey & Sedlacek, 1984) correlating with student-athlete GPA during the first semester of enrollment included positive self-concept, preference for long-term goals, demonstrated community service, and acquired knowledge in a field (Ting, 2009). Ting (2009) asserts that opportunities for
psychosocial development, developing long-term goals, and gaining practical application between college major and career opportunities are imperative for academic success in higher education. Positive self-concept and demonstrated community service emerged as meaningful cognitive factors in the two studies (Ting, 2009; Sedlacek & Adams-Gaston, 1992). These two studies also validate the idea that non-cognitive variables are more predictive of grades for student-athletes.

Finally, the role of hope in understanding motivational differences among student-athletes has also been explored (Curry, Snyder, Cook, Ruby, & Rehm, 1997). In a series of studies conducted by Curry et al. (1997), hope significantly predicted semester GPA for Division I student-athletes. In the Curry et al. (1997) study, the Dispositional Hope Scale (Snyder et al., 1991) was used, on the basis that hope reflects a successful set of a) agency, or goal-directed determination and b) pathways, an individual’s ability to conceptualize multiple paths towards achieving a goal (Snyder et al., 1991).

Internal academic factors summary. This section described various findings about internal factors influencing academic performance, including the roles of individual motivation, identity, and positive personal qualities. Overall, student-athletes with a strong commitment to the academic role display positive attributes including: a repertoire of study skills and sense of self-worth, increased intrinsic motivation toward academic tasks, and greater academic performance especially compared to student-athletes with an imbalance between academic and athletic roles, or a stronger commitment to the athletic role (Snyder, 1985). Greater identification with the athletic role appears to create an inverse relationship with academic adjustment and challenges with personal-emotional adjustment (Melendez, 2010). While all Division I student-athletes are required to balance academic and athletic roles, some students have a greater affinity towards the academic versus the athletic role and vice versa.

Studies have also shown that student-athletes who display various positive personal qualities perform better academically. Student-athletes with greater levels of hope also have higher semester GPAs and were more willing to commit to new goals (Melendez, 2010; Snyder, 1991). Possessing a positive self-concept emerged in various studies as positively correlated with higher GPAs and persistence (Sedlacek & Adams-Gaston, 1992; Ting, 2009; Tracey & Sedlacek, 1985; Tracey & Sedlacek, 1987).
Other qualities resulting in stronger relationships with GPAs and persistence include: focusing on and developing long-term over short-term needs, positive coping abilities, leadership experience, gaining practical experience between college major and career opportunities, a strong support system, and community involvement (Ting, 2009; Tracey & Sedlacek, 1984; Tracey & Sedlacek, 1987). Finally, research shows that student-athletes who suffer from higher levels of stress and competitive trait anxiety attain lower GPAs (Petrie & Russell, 1995). The following sections discuss the precollege, internal, and external factors contributing to variations in athletic performance.

**Student-Athlete Athletic Performance**

The athletic performance of student-athletes is also well studied, albeit not as extensively as academic performance. This first section reviews the measures used to evaluate student-athlete athletic performance in higher education, followed by precollege, external, and internal factors influential to athletic performance. To begin, in a national study of student-athletes regarding their experiences as college students, “more successful” athletes were identified as those who self-identified as first team, recipients of full athletic scholarships their first year of school, and/or recipients of all-conference recognition (Potuto & O’Hanlon, 2007). The term “less successful” was used to describe all other athletes. As an aside, the degree of athletic success was not an important factor in how student-athletes assessed their college experience; student-athletes with less success were no less positive about their college experience than those experiencing greater athletic success (Potuto & O’Hanlon, 2007).

In the Student-Athlete Climate Study report, Rankin et al. (2011) identified athletic success through the following four assessments: 1) I feel that I am performing up to my full athletic potential (traditional Likert); 2) classification of status, based on roster spot and/or frequency of competition (five-point metric from “compete in 0-20% of the contests” to “compete in 81-100% of the contests”); 3) number of times the team has participated in post-season competition (six-point metric from “never” to “five or more times”); and 4) the number of individual awards the student-athlete has earned (0 to 5; Rankin et al., 2011). Current status and athletics scholarship as metrics also appear on the 2015 NCAA GOALS assessment under college athletics experience (NCAA, 2015c). The 2012 NCAA GOALS
assessment uses participation in NCAA championships (including regional qualifiers and Division-I football bowl games) and individual athletic awards earned in college (e.g., All-American, All-Region, All Conference) as quantifiable athletics metrics. The GOALS metrics (2012, 2015) do not distinguish between high and lower performers, neither does it provide information so researchers may interpret what various scores mean. The information appears to serve as experience data for the NCAA to better understand how participation in athletics affects a student’s collegiate experience (NCAA, 2012; NCAA, 2015c).

These aforementioned assessments are used to derive a fairly objective outcome on athletic performance of student-athletes. The other studies around athletic performance examine particular qualities or traits of various competitive athletes. As an example, Catina and Iso-Ahola (2004) used a 23-item Positive Illusion scale to measure expected success (how successful you expect to be from extremely unsuccessful to extremely successful), motivation to compete, and actual success (e.g., indicate highest total [pounds] lifted in competition) (Catina & Iso-Ahola, 2004). Similarly, the 13 item Trait Sport Confidence Inventory (Vealey, 1986) measures how confident athletes generally feel when they compete in their sport. Participants rate themselves on a nine-point scale (1 = low, 5 = medium, 9 = high).

Additional research uses other constructs within the literature to measure young, elite, and professional athletes with respect to performance states (e.g., Pellizzari, Bertollo, & Robazza, 2011), emotional profiling and the ideal state of performance (e.g., Hanin, 2000), and the impact of external and environmental constraints on objective performance measures (e.g., playing time, individual statistics) (Peters, Fischer, & O’Connor, 1982; Stewart & Nandkeolyar, 2007). Similarly, athletic performance has been measured in some studies by extracting objective sport statistics from the population under study. As an example, Reese (2005) made use of various team (e.g., team record, conference record, RPI) and individual volleyball statistics (e.g., games played, service errors) to evaluate a program enhancing the mental skills of Division I intercollegiate volleyball athletes. Along these lines, Curry et al. (1997) used Division I track and field student-athletes’ best performance at an NCAA championship event and national qualifying mark to provide a season achievement measurement.
These aforementioned constructs, including athletic success questions (e.g., Potuto & O’Hanlon, 2007; Rankin et al., 2011; NCAA, 2012), assessments evaluating specific athletic related traits (e.g., Catina & Iso-Aloha, 2004), and various sport specific metrics (e.g., Reese, 2005) are very useful in terms of how we conceptualize the athletic performance of student-athletes. That said, for purposes of this study, an inclusive metric with criteria applicable to all athletes (revenue generating and non-revenue generating sports alike) is needed. Therefore, this study draws upon a metric derived from the literature appraised by a panel of experts in order to quantify Division I student-athlete athletic performance.

**Athletic Performance: Precollege Factors**

The research on precollege factors influential to athletic performance is limited to information on high school size. In addition to age and psychological skills, the size of a high school was indicative of starting status among college football athletes (Spieler, Czech, Joyner, Munkasy, Gentner, & Long, 2007). A larger high school often means more players on the roster, allowing high school football to mirror collegiate style football in things such as advanced techniques and a competitive playbook (Spieler et al., 2007). A larger high school also allows students to specialize in their position (Spieler et al., 2007), which is beneficial when entering college because the student-athlete will have greater experience and focused time in a particular area.

**Athletic Performance: External Factors**

One of the main determinants of high athletic performance is that the student-athletes may devote greater time and resources to athletics. This choice has conscious or unconscious unintended consequences on academic performance, underscored in previous sections. Pressures to strengthen athletic commitment can emerge especially among student-athletes who have more to gain from athletic success (P.A. Adler & P. Adler, 1991; Rishe, 2003). In addition, peer groups can contribute to favoring athletic demands over academic demands, especially among high profile and revenue generating sports (Simons et al. 1999). Snyder (1985) points to socialization factors that influence commitments to the academic or athletic roles. Examples of extrinsic awards that support the athletic role include trophies, prestige, and/or being honored with status such as All-American (Snyder, 1985).
Originally coined by P.B. Baltes and M. Baltes (1980) as “selective optimization”, individuals have a limited amount of time and energy to invest in various activities. Danish (1983) suggests that student-athletes allocate maximal effort to behaviors supporting optimal athletic performance. In addition, focusing on optimal athletic performance equates with less time spent pursuing external higher education related activities (Danish, 1983). This is similar to addition through subtraction – the minimization of pursuing external activities gives way to greater emphasis and focus on sport development.

An additional external variable affecting athletic performance, especially among male African American student-athletes, are stereotypical images portrayed in the media (Harrison, 2002). These images include the media portraying athletics as a popular and accessible route through which African Americans may increase their social and economic status (Edwards, 2000). Within this study (Harrison, 2002), African American male student-athletes in high profile sports aligned with successful athletic representations more often than successful intellectual and occupational images of success. This finding was no surprise to the researcher, who cited other theories on this phenomenon. As an example, African American athletes are celebrated on campuses and in the media mainly for their athletic prowess (Harrison, 2002). This focus on sport creates a disproportionate value on academic performance and can perpetuate diminished future aspirations (Harrison, 2002; Sailes, 1993). This is especially harmful for African American youth, who elevate athletes and look to them as their primary leaders and role models (Harrison, 2002). This is perpetuated by the absence of visible, prestigious African American male role models beyond the sports arena (Harrison, 2002).

Also cited in the external factors influencing academic performance section, the coach-athlete relationship is one of the most salient and influential relationships throughout a student-athlete’s career (Stirling & Kerr, 2009). In a study examining abused athletes’ perceptions of the coach-athlete relationship, three themes emerged with respect to athletic performance and success: 1) the participants often attributed their personal athletic success to their coach, due to the successful image attached to the coach; 2) student-athletes explicitly followed the training demands made by coaches and were less likely to question coaches with a record of championship success; and 3) a coach’s reputation of success
outweighed any non-sport related questionable practices or behaviors inflicted on student-athletes (Stirling & Kerr, 2009). Furthermore, negative feedback from coaches and teammates stifled internal athletic motivation (Woodruff & Schallert, 2008). Gearity and Murray (2011), for example, documented the psychological effects of poor coaching, although the themes of inhibiting a student-athlete’s mental skills and coping with being poorly coached were not examined through the lens of actual performance like the previously mentioned studies. In addition, the type of organizational structure an athletic department employs has also been used to examine athletic achievement (e.g., Cunningham & Rivera, 2001; Cunningham, 2002).

Perceptions of campus climate were discussed as influential to both learning and developmental outcomes for college students (Pascarella & Terenzini, 2005). The 2011 Student-Athlete Climate Study evaluated over 4,000 Division-I student-athletes designated athletic personnel interaction and faculty-student interaction as the two aspects of climate influential to student-athlete athletic success (Rankin et al., 2011). These two outcomes, faculty-student interaction and interactions with athletic personnel, had an influence on all three outcomes (i.e., academic performance, athletic performance, and identity) tested within this study. Interestingly, faculty-student interaction was positively related to athletic performance.

**External athletic factors summary.** In summary, various conclusions can be drawn based on external factors affecting athletic performance. External pressures to strengthen one’s athletic commitment influences on-field performance, and can materialize from a few sources: peer groups, especially from high profile sports (Simons et al., 1999), the realization that one has more to gain from athletic success over academic success (P.A. Adler & A. Adler, 1991; Rishe, 2003), and general socialization factors such as extrinsic awards recognizing prestige (Snyder, 1985). Danish (1983) suggests athletic performance is influenced by the choice to pursue activities that support optimal athletic performance, which by default interferes with academic time allotment. The messages student-athletes receive from the media, especially African American males, idealizing professional sport (Harrison, 2002; Sailes, 1993) and being celebrated on campuses mainly for athletic accomplishments propagates an athletic performance focus (Harrison, 2002). Again, similar to external academic factors, the coach-
athlete relationship is influential to athletic performance (Stirling & Kerr, 2009) especially the psychological effect coaches have on their athletes (Gearity & Murray, 2011; Woodruff & Schallert, 2008). Also similar to external academic factors, faculty-student interaction positively influenced athletic success, as well the number of interactions with athletic personnel (Rankin et al., 2011). The external factors influencing athletic performance is not as exhaustive as external academic factors, yet there are many important themes that emerged.

**Athletic Performance: Internal Factors**

This final section synthesizes the internal factors within student-athlete control influential to athletic outcomes. The majority of the research is centered on sport specific psychological skills, positive traits such as a strong sense of self, and various individual qualities including personality characteristics.

**Psychological skills.** There are several studies that detail the influence of psychological skills and student-athlete athletic performance. Starting football student-athletes demonstrated the ability to cope with adversity over non-starters (Spieler et al., 2007). Coping with adversity has been identified as a leading quality in elite athletes from various populations (e.g., Olympians) and is a product of experience (Gould, Eklund, & Jackson, 1992). Spieler et al. (2007) suggest that coping with adversity may be the gateway concept that includes other psychological skills, including peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, confidence and achievement motivation, and coachability.

Self-confidence, maximum potential, and the use of attentional focusing were the most important variables differentiating successful versus unsuccessful Big Ten Wrestlers (Gould, Weiss, & Weinberg, 1981). Specifically, more successful wrestlers indicated they were closer to reaching their maximum potential as athletes, exuded more confidence than less successful wrestlers, experienced high levels of anxiety pre-competition versus during the actual performance, and prepared for matches through channeling their attention on thoughts related to being successful in the match (Gould et al., 1981). These findings verify other studies with different populations showing similar results (e.g., Highlen & Bennett, 1979; Mahoney & Avener, 1977). A common psychological thread within these studies was higher
confidence among elite performers, which has also been noted in other studies assessing alternative populations of elite athletes (Highlen, & Bennett, 1979). In addition to self-confidence, elite athletes display desirable psychological qualities such as predictable feelings during peak performances, optimism, self-control, mental and physical relaxation, and precise awareness (Garfield & Bennett, 1981).

In addition, there are many other studies in the literature that discuss the relationship between psychological factors and athletic performance including but not limited to: internal perceptions such as self-efficacy, goal-setting ability, and achievement motivation (Singer, 1988); predictable feelings during peak performances including confidence, optimism, self-control, mental and physical relaxation, and precise awareness (Garfield & Bennett, 1984); the impact of prior athletic performance paired with psychological factors (e.g., Morgan, 1980; Gould et al., 1981), as well as studies assessing characteristics of elite athletic performers outside of the collegiate setting. However, the literature evaluating student-athlete athletic performance in the higher education setting is limited to what has been reviewed for this study.

**Student-athlete personal qualities and traits.** An athlete’s self-esteem has been tied to sport performance. Specifically, athletes’ self-worth or self-value and perceptions of their athletic ability were shown to critically influence sport behavior (Danish & Hale, 1983). Danish and Hale (1983) also suggested focusing on psychological skills training (e.g., relaxation or imagery) without a solid sense of self would be ineffective. A sense of self-efficacy in having successfully executed a challenging task with competence (that is within one’s capacity to perform) positively contributes to the commitment of the athletic role and subsequent athletic performance (Deci, 1974). Intrinsic factors associated with sport including enjoyment, thrills, and the ecstasy of competition also influence athletic role commitment and performance (Snyder, 1985). On the opposing side, student-athletes who perceived their individual athletic performance as poor experienced a declining internal state of athletic motivation (Woodruff & Schallert, 2008).

The effect of hope was reported as an important indicator of academic achievement among student-athletes in preceding sections. Hope was also found to be a useful predictive tool for gauging
athletic performance in sport achievement settings (Curry et al., 1997). Using the State Hope Scale (Snyder et al., 1996) and the Dispositional Hope Scale (Snyder et al., 1991), researchers have discovered that dispositional and state hope accounted for 56 percent of the variance in predicting athletic performance (Curry et al., 1997). Interestingly, other psychological traits related to self-esteem, confidence and mood were not meaningful in athletic performance predictions (Curry et al., 1997). Based on the reported empirical studies, high athletic performance as well as academic performance can be traced back to the role of hope embodied by student-athletes.

The Positive Illusion Scale was used to test direct and indirect effects on athletic success among competitive male and female power lifters (Cantina & Iso-Ahola, 2004). The scale includes beliefs about sport behaviors, outcomes, individual abilities, and their influence on success (Cantina & Iso-Ahola, 2004). The results indicated the greater the athletes’ positive illusion of self and behaviors, the greater amounts of success were actualized over time (Cantina & Iso-Ahola, 2004). In addition, the indirect benefits of positive illusion included an increase in expectations of success and motivation to compete (Cantina & Iso-Ahola, 2004). While the population sample was not collegiate athletes, the theory aligns with the macro idea that human performance and success is predicated on strong positive views of self, a greater sense of awareness, control over behaviors and performance outcomes, and increased expectations of the future (Taylor & Brown, 1988). The key result from this research, which is also fairly intuitive, is that a positive mindset may be a factor in athletic performance.

**Personality and athletic performance.** Athletic performance has also been viewed through the lens of personality traits. Two of the five major personality dimensions developed by McCrae and Costa (1987), neuroticism and conscientiousness, were significantly related to sport specific athletic performance among Division I women’s soccer teams. The combination of low neuroticism and high conscientiousness exemplify traits from the quintessential high achiever: emotionally stable, capable, competent, and driven to succeed (Piedmont, Hill, & Blanco, 1999). Interestingly, the personality statistics were less influential than coaches ratings in predicting actual performance (Piedmont et al., 1999).
Internal athletic factors conclusion. A few main themes can be pinpointed from the internal factors influential to athletic performance. First, high athletic achievers have strong sport related psychological skills. This includes the ability to channel emotions in productive ways pre-competition (Garfield & Bennett, 1984; Gould et al., 1981). They have the ability to cope with adversity (Eklund & Jackson, 1992) and have strong coping skills overall (Spieler et al., 2007). In addition self-confidence and strong coping skills appear to breed other desirable psychological qualities (Garfield & Bennett, 1981; Gould et al., 1981).

High performing athletes generally feel good about themselves which aligns with the thought that high performance is predicated on salient views of self (Taylor & Brown, 1988). High performers possess strong levels of self-confidence (Garfield & Bennett, 1984; Gould et al, 1979; Gould et al., 1981). Athletes’ perceptions of their self-worth and self-efficacy in executing challenging tasks were also important (Deci, 1974; Woodruff & Schallert, 2008). Lastly, high athletic performance is tied to specific personality traits: dispositional and state hope (Curry et al., 1997) and neuroticism and conscientiousness (Piedmont et al., 1999).

Theoretical and Conceptual Frameworks

The forthcoming sections provide an overview of the three theoretical and conceptual frameworks used for this study, including Mindset/Implicit Theories of Self (Dweck, 2006), Personal Growth Initiative (Robitschek, 1998), and Student-Athlete Experiences (Cox et al., 2004). All three constructs align with various psychological, developmental, and behavior-based gains, which are detailed in the following sections. In addition, populations studied and successful interventions using each framework have been reviewed.

Mindset: Implicit Theories of Self

The Implicit Theories of Self theory has significant presence in educational and developmental literature. Known commonly as Mindset, the framework encompasses two main theories students hold about the nature of intelligence: 1) a growth mindset, where intelligence is viewed as a malleable quality that can be cultivated and developed through effort, learning, and challenge; and 2) a fixed mindset,
where intelligence is viewed as a fixed, concrete entity (Blackwell et al., 2007; Dweck, 1999; Dweck, 2006). Throughout the Implicit Theories of Self literature, a growth mindset is also referred to as an incremental theory of intelligence, whereas a fixed mindset is known as an entity theory of intelligence. The perils of possessing a fixed mindset with respect to academic performance are numerous, as these students need and prefer easier, low-effort successes in an attempt to protect their abilities and self-esteem, pass up valuable learning opportunities if they fear these activities may reveal inadequacies, experience a decreased ability to cope with setbacks, and need validation that they are outperforming other students (Dweck, 1999; Dweck & Leggett, 1988; Mueller & Dweck, 1997).

**Mindset and academic performance.** Based on scientific evidence, there are many positive conclusions associated with embodying a growth mindset relative to academic performance and motivation. Students with a growth mindset tend to be more academically motivated and perform at higher levels than students with a fixed mindset (Dweck, 1999; Henderson & Dweck, 1990). Furthermore, even when students demonstrate equal intellectual ability, their mindset shapes their responses to academic challenges (Blackwell et al., 2007). Incremental theorists tend to focus more on learning goals aimed at increasing individual ability, as opposed to performance goals that document ability (Blackwell et al., 2007; Dweck & Leggett, 1988). Other positive qualities of the growth mindset include the motivation to seek challenges or risks in an effort to grow skills, versus the entity theory mindset of opting for easier goals to promote flawless performance (Blackwell et al., 2007; Dweck & Leggett, 1988). On this topic, Mueller and Dweck (1997) discovered that college students with a growth mindset opted for “being challenged” nearly 70 percent of the time, compared to students with a fixed mindset who preferred earning a “good grade” over challenge nearly 65 percent of the time. Another study found college students with a growth mindset were more likely to elect a remediation course said to be critical for overall college learning and performance (Hong et al., 1998). These students were also more likely to attribute academic shortcomings to a lack of effort, a malleable determinant of performance, as opposed to a lack of ability (Hong et al., 1999). In addition, college level students with a
growth mindset were more likely to practice mastery-oriented strategies over helpless strategies in the face of setbacks (Robins & Pals, 2002).

**Athletic beliefs transferability.** Dweck and her colleagues have determined that implicit theories can be domain specific (Dweck, Chiu, & Hong, 1995). For example, an individual can hold a growth mindset towards intelligence and a fixed mindset with respect to athletic beliefs. Since this study will measure beliefs student-athletes hold about their intelligence, it is appropriate to also assess the beliefs student-athletes hold about their athletic abilities. The beliefs individuals hold about their athletic abilities has also been examined scientifically. Sarrazin, Biddle, Famose, Francois, Fox, and Durand (1996) created the Sport Incremental Ability Scale (SIAS) to measure the mindset of adolescent athletes, substituting ‘sport ability’ for ‘intelligence’ based on procedures from Dweck and Henderson (1989). In one study, beliefs about sport ability were not strongly connected to athletic learning goals, yet a second study demonstrated mastery-oriented goals were chosen by adolescent athletes with a growth mindset towards their athletic ability (Sarrazin et al., 1996). Their second study was more closely aligned with results reported in the academic setting showing important links between individual athlete goal choices and the nature of intelligence (e.g., Dweck & Leggett, 1988).

**Interventions.** One intervention, modeled and expanded from theory altering experimental materials (Chiu et al., 1997), attempted to teach a more malleable theory of intelligence over eight 25-minute periods once a week over the course of eight weeks (Blackwell et al., 2007). During these sessions, a foundational message on the brain’s ability to form new connections was presented through an interesting reading supported by activities and discussions. (Blackwell et al., 2007). The growth mindset group demonstrated an increase in academic motivation and showed no decline in math scores post-intervention (Blackwell et al., 2007). Additional academic benefits included participants’ adopting stronger learning goals and more positive beliefs about effort, attributing shortcomings less to ability-based “helpless” attributions, responding favorably in the face of failure, and demonstrating increased achievement over a two year period compared to peers endorsing an entity theory of beliefs (Blackwell et
al., 2007). Good, Aronson, and Inzlicht (2003) found that compared to a control group, the growth mindset intervention led to improvements in adolescents’ achievement on test scores.

Mindset can be influenced in more immediate terms, despite the preconceived mindsets students hold towards their abilities (Dweck, 1999). College students who read entity theory passages were more likely to choose a performance goal task to appear smart, whereas reading an incremental theory passage increased a subject’s likelihood of pursuing a learning goal in an attempt to actually become smarter (Dweck & Leggett, 1998). In addition, when an incremental theory of academic ability was taught to college students, it resulted in higher grades over both the non-treatment control group and the group taught Gardner’s Multiple Intelligence model of abilities (Aronson, Fried & Good, 2002).

Benefits of possessing a growth mindset. In addition to academic performance, possessing a growth mindset leads to higher levels of self-efficacy (Kanfer, 1990), increased intent to persist and put forth greater effort (Jourden, Bandura, & Banfield, 1991), the ability to make better management decisions (Wood & Bandura, 1989), improved self-esteem (Nussbaum & Dweck, 2008), and greater performance in physical activities (Lirgg, George, Chase, & Ferguson, 1996; Ommundsen, 2003). Dweck’s Implicit Theories of Self scale is multifaceted in that it has been adapted and modified to measure individual’s beliefs about subjects outside the scope of this study, demonstrating how the growth mindset is beneficial among various contexts including: social-moral reality (Chiu et al., 1997), leadership mindset among high school and college coaches (Chase, 2010), using trait or trait-relevant information to make behavioral predictions and inferences (Chiu et al., 1997), and perceptions of characteristics and dictating interactions with others (Dweck, 1999). The positive impact of using a growth mindset is documented among business leaders, corporate industries, and among athletic coaches such as Pat Summit, Mike Krzyzewski, and John Wooden (Chase, 2012). Although this study focuses specifically on the academic and athletic performance implications of holding a growth versus fixed mindset, mindset can and does promote positive qualities in multiple domains.

Personal Growth Initiative
Many theories recognize the concept of personal growth throughout the lifespan as an important and healthy process. For example, humanists support Maslow’s self-actualization theory, encouraging individuals to actualize their potential and allow the self to emerge (Maslow, 1965). Other theorists describe personal growth triggered by environmental forces such as a widower who becomes aware of increased self-efficacy (Robitschek, 1998). Adlerian theorists describe the growth process as striving to attain some ideal (Robitschek, 1998), while Erikson uses developmental stages to identify personal growth throughout the lifespan such as a child developing a more complex form of moral reasoning related to age (Prochaska & DiClemente, 1986; Robitschek, 1998). Ryff (1989) describes the personal growth process as more of an awareness process, such as a person who recognizes themselves growing and expanding.

The personal growth initiative (PGI) framework used in this study is distinct from the abovementioned situations. PGI is focused on the active and intentional engagement people exhibits toward growth-enhancing behaviors and change, benefiting all areas of their life facilitated by awareness, cognitive processes (e.g., attitudes, beliefs, and values), behaviors, and preparation (Robitschek, 1998; Robitschek, 1999; Robitschek & Kashubeck, 1999). For example, an undergraduate student who actively engages in self-exploration to find a better major fit within their institution is modeling the PGI framework. In this scenario, the individual is fully aware that change is occurring and is actively involved in the intentional process of major exploration.

**PGI and relationships to psychological constructs.** Previous research has demonstrated that PGI is positively related to cognitive traits associated with human agency such as instrumentality, an internal locus of control, and vocational identity, while negatively related to chance locus of control (Robitschek, 1998; Robitschek & Cook, 1999). PGI has also been linked to behavior based psychological constructs such as assertiveness, career exploration, and problem-focused types of coping (Robitschek, 1998; Robitschek & Cook, 1999). The cognitive component of PGI resembles Dweck’s Mindset framework, which also focuses on cognitive processes (e.g., beliefs and attitudes) individuals hold about their individual ability levels.
Robitschek and Kashubeck (1999) found that higher levels of PGI were associated with positive psychological benefits such as greater levels of well-being and lower levels of distress, including anxiety and depression. In fact, they discovered a significant negative correlation between higher levels of PGI and depression (Robitschek & Anderson, 2011). Robitschek (2013) takes the stance that PGI is amenable to hope for personal growth and change, based on a study examining PGI and hope constructs. Similarly, PGI is a transferable skill that can influence pursuits of growth across life domains and, most importantly, domains that affect personal identity (Robitschek, 2013).

**PGI intervention.** PGI moves beyond a construct and into practical application through the development of Intentional Growth Training (IGT), which has demonstrated effectiveness among undergraduate students (Thoen & Robitschek, 2013). The IGT intervention involves teaching the process of personal growth through theory, concepts, and skills of PGI (Thoen & Robitschek, 2013). One example is having participants complete a growth activity over the course of a week that is beyond their comfort zone (Thoen & Robitschek, 2013). Based on the findings of three studies, there is evidence that a one-week IGT intervention is effective at increasing levels of PGI (Thoen & Robitschek, 2013). Specifically, making the intervention more interactive led to increased PGI above and beyond placebo conditions (Thoen & Robitschek, 2013). Robitschek (1998) suggested future use of the PGI construct in outcome research and program evaluation settings.

**Student-Athlete Experiences in Higher Education**

Originally focused on evaluating educational outcomes, the field of higher education has shifted over decades to obtain student insights on educational experiences (Astin, 1993b). In 1969, Chickering noted the importance of capturing actual student involvements (e.g., time spent studying, courses taken, hours worked per week), as well as the extent and nature of classroom and out-of-class interactions (e.g., socialization with faculty and peers) when quantifying student experiences. Furthermore, to understand the impact of college, factors such as initial or pre-enrollment characteristics, institutional characteristics, student academic experiences, and social or non-academic experiences were considered (e.g., Astin 1993b; Chickering & Reisser, 1993).
These circumstances fueled seminal works in higher education, such as the Seven Principles of Good Practice in Undergraduate Education (Chickering and Gamson, 1987) and Terenzini and Pascarella’s (1980) proposal of eight student outcomes in need of deeper research. Various metrics have emerged to capture actual student experiences, such as the Academic and Intellectual Development Construct (Pascarella & Terenzini, 1980), The National Survey of Student Engagement (NSSE; Kuh, 2001), The College Student Report, and the College Student Experiences Questionnaire (CSEQ; Cox et al., 2004). These scholarly reports and metrics support our understanding of effective practices and stimuli promoting a positive and meaningful higher education experience for students.

These studies have also been the impetus to over 30 years of scholarly research examining the experiences of collegiate athletes (Paule & Gilson, 2010). The literature on intercollegiate athletic experiences shows positive educational experiences resulting in beneficial personal and academic gains (Danish, Petitpas, and Hale, 1993). The literature also points to negative relationships between athletic experience and various personal, academic, and even vocational gains (Pascarella et al., 1995). Both perspectives are reviewed in forthcoming sessions; although Division I student-athletes are required to commit to their sport in a similar manner, findings have been mixed with regard to the student-athlete experience. The following sections introduce the inventory used to quantify student-athlete experiences in this study, followed by a review of the relevant literature based on the inventory’s main constructs – academic, social, and everyday experiences.

Measuring student-athlete experiences. In 2004, the Student-Athlete Experiences Inventory (SAEI) was deemed a valid and reliable instrument measuring the experiences of student-athletes. The exploratory factor analysis on the SAEI resulted in 39-items comprised of three factors including everyday experiences, social interaction experiences, and academic experiences. According to the authors, items reflecting social interaction experiences and academic experiences were decidedly social and academic in nature, whereas everyday experiences were comprised of a medley of experiences, suggesting a lack of depth in this particular area (Cox et al., 2004).
The authors took this a step further by determining whether these everyday experiences, social interactions, and academic experiences were related to educational gains and outcomes (Cox et al., 2004). In order to determine whether experiences were related to outcomes, the subscales on the SAEI were studied in relationship to a Student-Athlete Gains Inventory (SAGI). The results of the analysis indicated a significant and meaningful relationship between student-athlete experiences and gains. The academic and social experiences of athletes were especially correlated to liberal arts and practical gains (Cox et al., 2004). Cox et al. (2004) demonstrated that everyday experiences of athletes were also related to positive gains, albeit not as strongly as academic and social experiences (Cox et al., 2004). For the purposes of this study, the SAEI will be used to measure the academic, social, and everyday experiences of student-athletes in higher education.

**Academic and social experiences and gains.** There are many examples within the literature of how the experiences of collegiate athletes result in positive outcomes. Findings from a national sample of student-athletes revealed intercollegiate athletic participation was positively correlated with satisfaction with the overall college experience, persistence in higher education, and motivation to pursue and complete a bachelor’s degree (Astin, 1993a; Ryan, 1989; Pascarella & Smart, 1991). Student-athletes also report increased feelings of inclusion, satisfaction in higher education, and greater motivation to earn a degree compared to their non-athletic peers (Danish et al., 1993). Furthermore, athletic involvement was associated with student-athlete satisfaction in the areas of the academic reputation of an institution, the intellectual environment, student friendships, and institutional administration (Astin, 1984).

A national study focusing on 18 NCAA Division I universities showed generally positive experiences reported by student-athletes (Potuto & O’Hanlon, 2007). The survey used to report these findings was developed by an ensemble of staff from the NCAA and various institutions. The athletic experience was reported to instill values and enhance the overall college experience independent of experiences derived from other aspects of the college (Potuto & O’Hanlon, 2007). Participants also viewed participation in athletics as an extremely valuable part of their personal development and influential in the development of desirable traits (Potuto & O’Hanlon, 2007). The curricular and co-
curricular experiences sacrificed because of athletic participation were thought of as acceptable trade-offs (Potuto & O’Hanlon, 2007). Furthermore, data from the National Survey of Student Engagement (NSSE) was used to assess the experiences of student-athletes (Umbach, Palmer, Kuh, & Hannah, 2006). This research underscored that student-athletes were as engaged in educationally purposeful activities as their non-athletic peers, reporting higher levels of satisfaction with the college experience and perceived institutional support over those non-athletic peers (Umbach et al., 2006).

Paule and Gilson (2010) examined the benefits and challenges athletes faced, specifically those who participated in non-revenue generating sports. This study featured 24 distinct themes, with the five most popular consisting of academic benefits, being on a team, learning life skills, improved time management, and tangible benefits such as equipment, facilities, and travel. The NCAA’s GOALS and SCORE studies (2008) affirmed that a majority of collegiate athletes were actively involved in their campus community outside of athletics, and their athletic status benefited them socially. In addition, former Division I male and female student-athletes reported satisfaction with their college careers (Paule-Koba & Farr, 2013). The top intangible lessons learned resembled the previously mentioned qualities of hard work, time management, leadership, and dedication (Paule-Koba & Farr, 2013).

In terms of social engagement, student-athletes interacted most frequently with other students, surpassing interaction with faculty, student organizations, and academic related activities, which was influential to student-athlete self-identity, cultural attitudes, and gains in learning and communication (Gayles & Hu, 2009). This is encouraging, considering some studies suggest athletic subcultures influence student-athletes to engage primarily with other student-athletes, versus non-student-athlete peers (Bowen & Levin, 2003; Shulman & Bowen, 2001). However, differences in gender emerged. Male and high profile student-athletes interacted with non student-athlete peers less than female and low profile sport student-athletes (Gayles & Hu, 2009). These conclusions support previous examples of how female student-athletes are more balanced in terms of academic and athletic motivation (Gaston-Gayles, 2005) and academic, athletic, and social roles (Simons et al., 1999) compared to male student-athletes.
A longitudinal study encompassing 23 two and four-year colleges revealed that intercollegiate athletic participation influenced gains in students’ internal locus of attribution during the first year of higher education (Pascarella, Edison, Hagedorn, Nora, & Terenzini, 1996). Similar to other studies on academic preparedness, Aries et al. (2004) determined many student-athletes enter college at an academic disadvantage, display less confidence in their academic abilities, and report more barriers to academic performance. Despite this fact, participants demonstrated no significant academic underperformance compared to non-athletes with similar demographic variables and precollege characteristics (Aries et al., 2004). Other researchers have found similar results in the academic performances of student-athletes versus non-athletes with similar precollege characteristics (Hood et al., 1992).

**Academic and social experiences and outcomes.** The experiences of student-athletes are not conclusively positive in nature. The 2011 SCORE study examined the experiences of revenue and non-revenue generating former student-athletes and the differences between graduation rates. Findings revealed non-graduating student-athletes experienced a lower amount of academic effort, lower self-identification with being a student-athlete, less satisfaction with the overall college experience, and a higher belief in turning professional (NCAA, 2011). The internal responses of student-athletes, defined as internal feedback controllable by the individual and not directed towards others, revealed over one-third of participants wished they could change a personal aspect about their athletic career, such as take the experience more seriously (Paule-Koba & Farr, 2013).

The literature also reveals the negative impact intercollegiate athletic experiences have on cognitive development. Specifically, in a study examining over 3,000 student-athletes from 18 four-year and five two-year colleges indicated that intercollegiate athletic participation was found to have significant adverse consequences for the general cognitive development of both males and females during their first year of higher education (Pascarella et al., 1995). Similar to comparisons made between male and female student-athletes in other studies, women showed less pronounced implications than men (Pascarella et al., 1995). Within this study, males from revenue-generating sports (football and basketball) experienced net declines in reading comprehension and math skills, while students in other sports and
non-athletes showed net gains during their first year (Pascarella et al., 1995). This trend can be tied to first year student-athlete tendencies (especially from football and men’s basketball), to take coursework in applied or professional areas (e.g., physical education, speech pathology, family studies) that have little relationship gains in standardized first-year year reading comprehension or mathematics scores (Pascarella, et al., 1995). Corroborated with another study measuring intercollegiate athletic experiences and cognitive impact, student-athletes scored significantly lower on critical thinking abilities and dispositions compared to their non-athletic peers (McBride & Reed, 1998).

**Everyday experiences and gains.** Dating back to the 1970s and 80s, five studies were conducted centered on the sport experiences of 2,200 student-athletes participating in structurally and philosophically opposing athletic programs. The student-athletes were separated into one of two categories: 1) pre-Title IX athletes, athletes of the 1970s, athletes in process-oriented programs, and Division III athletes; or 2) post-Title IX athletes, athletes of the 1980s, athletes in product oriented sport models, and Division I athletes (Blinde & Greendorfer, 1992). While both groups shared common experiences, the latter group was more likely to select an institution for sport related reasons, participate in athletics for extrinsic reasons, experience challenges meeting both student and athlete roles, and characterize sport participation as a job (Blinde, 1986; Blinde & Greendorfer, 1987).

Danish (1983) suggests “because we rarely have an opportunity to see and study the degree of personal competence attained as clearly as we do in sport, sport becomes an important inquiry” (p. 222), especially for psychologists and practitioners interested in studying optimal development. The personal growth and developmental gains accomplished by collegiate student-athletes are cornerstones of the experience knowledge base (P.A. Adler & P. Adler, 1991; Paule & Gilson, 2010). Simmons and Freeman (2006) claimed that personal development was the most critical component to the collegiate experience among student-athletes.

Furthermore, student-athletes embodied self-reflection and developmental growth by admitting their faults and taking responsibility for changes they would make in their careers (Paule-Koba & Farr, 2013). Not surprisingly the most popular external influences on a student-athletes’ career were coaches,
followed by teammates and family, with answers ranging from one of two extremes – extremely positive or extremely critical (Paule-Koba & Farr, 2013). These findings support the 2010 GOALS summary depicting the importance of the athlete-coach relationship on contributing positively or negatively to student-athlete development (NCAA, 2011).

In addition, student-athletes reported higher levels of well-being compared to non-athletes and were as likely to report each year they had grown as a person, engaged in new interests and activities, spent time getting to know people with diverse backgrounds, and found a home at their institution (Aries et al., 2004). These findings substantiate reports demonstrating that student-athletes experience growth and satisfaction comparable to non-athletes as measured by the Sophomore Student Life Survey (Cantor & Prentice, 1996; Richards & Aries, 1999). The personal growth in these cases was largely related to time spent with teammates on the field as opposed to time spent with teammates off the field (Richards & Aries, 1999).

Astin (1993) determined athletic participation was positively associated with overall satisfaction with the higher education experience, motivation to earn a degree, and in the development of interpersonal and leadership skills. Miller and Kerr (2002) found athletic participation, namely the social networks created by athletic teams on campus, eased feelings of loneliness and stress that often accompany significant life changes within the first year of higher education. Involvement with sport also provides opportunities to practice leadership qualities, which can promote feelings of optimism, self-assurance, confidence in attaining short and long-term goals, and the ability to cope internally with stress (Melendez, 2006). Brewer (1999) reported that a strong athletic identity assisted in a salient sense of self, establishment of social networks, improved life management skills and increased athletic motivation. In a different study however, less identification with the athletic role resulted in greater tolerance of teammate diversity and increased interaction with faculty (Rankin et al., 2011).

**Everyday experiences and outcomes.** On the other side of the equation, many athletes tie their identity as a person to their sport performance, viewing themselves as successful athletes versus successful people (Danish et al., 1993). The self-esteem of student-athletes interrelated with sport
performance is not an isolated finding, especially when a strong athletic identity is of highest importance (Melendez, 2006). The degree to which a student-athlete identifies with the athletic role is considered their athletic identity, which can also come with a negative consequence on experiences and development. Student-athletes also face increased difficulty in the areas of injury management, sport career termination, and career development (Brewer, 1999).

Furthermore, Miller (2002) demonstrated how experiences of fourth and fifth year student-athletes were categorized into three competing spheres – athletic, academics, and social. The student-athletes described an inability to fulfill any of the three roles and were forced to make compromises and negotiations throughout their careers (Miller, 2002). One notable theme was the shifting of spheres in terms of their importance from entry to graduation (Miller, 2002). This research corroborates findings representing conflicting sets of motivations among student-athletes. Specifically, student-athletes negotiated who they were and what motivated them academically and athletically throughout their careers, identifying across the following spectrum of roles: a) stay to play, b) what am I doing here?, c) the best of both, d) sports aren’t everything, and e) the student (Woodruff & Schallert, 2008).

There are specific psychosocial stages that are foundational to all traditional students defined as ages 18 – 24. On top of that, student-athletes, in particular, face unique developmental transitions, such as challenges with interdependence and lack of career development (Howard-Hamilton & Sina, 2001). Due to these unique challenges, there is a shared responsibility among student affairs practitioners to understand specific developmental struggles student-athletes endure, as well as the related challenges encompassed in academic, athletic, and personal development pursuits (Ferrante & Etzel, 1991).

Many students report vocational development as the leading reason to attend higher education institutions (Gordon, 1982). Much of the scholarly literature reports career planning as an inhibited component of the student-athlete experience. Regrettably student-athletes show considerable limitations in terms of career development, especially when compared to their non-athletic peers. Sowa and Gressard (1983) demonstrated how student-athletes score significantly lower than their non-athlete peers in educational planning, career planning, and mature relationships. These authors (1983) suggested a dual
approach of academic and personal counseling that addresses developmental steps that have the potential to cause serious problems in an athlete’s life. The rigorous time demands, absence of clear career models, and narrow range of life and work experiences are some of the reasons cited for insufficient career development (Kennedy & Dimick, 1987).

**Summary**

It is vital to continue investigating internal qualities influential to academic performance among student-athletes. The empirical attention devoted to external factors influential to academic performance, such as interaction with faculty and peers outside the athletic department, coaches influence, athletic department success and strategy, scholarships, and policy is abundant. Conversely, research on internal factors influential to student-athletes’ academic performance, such as intrinsic motivation, positive personal qualities, and balance between academic and athletic roles is not as extensive. Internal factors are arguably more important than external factors and/or precollege factors because they can be directly influenced by students to improve their outcomes. As an example, growth mindset interventions have yielded beneficial results in K-12 populations, including increases in academic performance and motivation (Dweck, 2006). Furthermore, a growth mindset corresponds with resilience and responding positively to challenges (Dweck, 2006), similar to the aforementioned traits found in elite athletic performers (e.g., Eklund & Jackson, 1992; Spieler et al., 2007). High performing athletes also hold positive beliefs about themselves (e.g., Garfield & Bennett, 1984; Gould et al., 1981). Individuals who possess a growth mindset also perceive their abilities as adaptable and expanding (Blackwell et al., 2007; Dweck & Leggett, 1988). These high athletic performers also report a sense of control over performance outcomes and positive feelings during challenges (Garfield & Bennett, 1984; Gould et al., 1981), similar to the tenants of a growth mindset (Dweck & Leggett, 1988). The Mindset theory with respect to beliefs about athletic ability (Sarrazin et al., 1996) shows similar results to those found in academic settings, yet mindset has not been studied among collegiate athletes.

Personal Growth Initiative is related to desirable human agency traits, such as possessing more of an internal locus of control and positive behaviors including assertiveness and problem-focused types of
coping (Robitschek, 1998). Desirable personal traits are also found among high academic performers (e.g., Melendez, 2010; Sedlacek & Adams-Gaston, 1992; Ting, 2009), as well as high athletic performers (e.g., Garfield & Bennett, 1984; Taylor & Brown, 1988). Similar to Mindset, Personal Growth Initiative (Robitschek, 1998) also relies on cognitive processes (e.g., attitudes and beliefs) with respect to individual ability to grow and reach one’s potential, which is present in student-athletes who strive towards maximizing athletic potential (Gould et al, 1981). Higher levels on the PGI scale are associated with increased psychological benefits, well-being, and lower levels of distress (Robitschek & Kashubeck, 1999). Similarly, these traits are common in successful athletic performers in the form of high coping skills and the ability to manage adversity (Spieler et al., 2007). Many parallels can be drawn between high academic and high athletic performers as well as those with high levels of Personal Growth Initiative and a growth mindset.

Finally, the experiences of student-athletes on college campuses have been used as a framework to conceptualize academic performance, specifically with links to academic and liberal arts gains (Cox et al., 2004). The impact of academic, social, and everyday experiences and athletic performance however is currently unknown. The quantity of research conducted on both the positive and negative academic, social, and everyday experiences of college student-athletes is fairly robust. One area overlooked to date, however, is how the experiences of high performers differ from low performers, which is another aspect this study will investigate.

Chapter 3 provides an overview of the current study’s methodology, including research design, data source and analysis, materials, data collection procedures and ethical considerations.
CHAPTER 3
RESEARCH METHOD

The study of student-athlete performance has revealed that variations in academic performance tend to align with three main themes: 1) precollege factors, 2) external factors beyond individual control, and 3) internal factors which may be controlled by the individual. Even though the research on athletic performance is not as exhaustive, the same three themes emerge. The majority of factors contributing to or inhibiting academic performance tend to align with external factors such as meaningful interaction with faculty, perceptions of climate, academic policies, and peer influence. With respect to athletic performance, external factors such as socialization and recognition, peer group influence, the coach-athlete relationship, and pressures to strengthen one’s athletic commitment emerge as significant. With this comprehensive understanding of external factors, there is a need for further research examining internal factors accounting for a student’s academic and athletic performance. Therefore, the purpose of the study was to examine differences in internal factors among Division I student-athletes’ various levels of academic performance and athletic performance. The working definition of student-athlete success is attaining high performance both academically and athletically as defined by the incorporated performance metrics.

The intent of this chapter is to describe the steps that were taken to address the purpose of this study. The chapter is divided into four sections. The first section provides a general overview of the study’s research design. The second section substantiates the data source, including the variables under study. The third section reviews data collection procedures, including participant selection and instrumentation. The final section addresses the statistical analysis of the data, including the procedure of between-group designs and variable analysis, and this section also provides ethical considerations. The chapter concludes with a chapter summary.

Research Design

This quantitative study was designed to examine Division I FBS student-athlete academic and athletic performance and three psychological, developmental and behavior based frameworks that
represent internal factors. This study examined how academic and athletic performers of various ability levels differed on the various internal factors. The question guiding this study was:

1. How do academic and athletic performers of various ability levels differ on Academic Mindset, Athletic Mindset, Personal Growth Initiative, and Academic, Social, and Everyday Experiences?

A two-factor Multivariate Analysis of Variance (MANOVA) was used to address the research question. MANOVA is appropriate in determining whether multiple levels of independent variables on their own or in combination with another influence some pattern of responding to the dependent variables. Specifically, the two-factor MANOVA design explores between-groups patterns of differences on a set of variables (Hand & Taylor, 1988). These variables are internal factors defined as Mindset, Personal Growth Initiative, and Student-Athlete Experiences among four types of student-athlete performance based on two independent variables: 1) high academic performance, high athletic performance; 2) high academic performance, low athletic performance; 3) low academic performance, high athletic performance; and 4) low academic performance, low athletic performance. The expectations entering into this study were that student-athletes who attain high academic and athletic performance would tend to have a growth mindset towards academics and athletics, higher levels of Personal Growth Initiative, and a greater number of academic, social, and everyday experiences.

**Data Source**

The population for this study included NCAA Division I student-athletes on university athletic team rosters from Football Bowl Subdivision (FBS) institutions. Acknowledging that student-athletes cannot be distilled into simple categories, it is useful to seek common constructs to be able to make generalizations representing the entire Division I athletic population (Comeaux & Harrison, 2011). The utility of making performance statements about Division I student-athletes through this study aligns with current trends. These trends are identifiable among various stakeholders who address Division I student-athletes as a group when reporting news, enacting policies and bylaws, or developing student-athlete programs. Obtaining a diverse sample of Division I student-athletes for this study, including athletes from
both revenue generating and non-revenue generating sports, allowed for inferences about Division I FBS student-athlete performance in general.

Sample Selection

The participant sample was drawn from six institutions. The original and justifiably lofty goal was to obtain 100 participants from each of six institutions from both the Power Five and Group of Five conferences – resulting in 600 total participants from six institutions. The present study comprised four institutions from the Pac-12 athletic conference, one of the Power Five conferences as determined by the NCAA Division I Board of Directors in 2014. The other two institutions represented the Mountain West Conference, one of the Group of Five conferences also determined by the NCAA Division I Board of Directors. The six institutions representing two different conferences were selected based on ease of access, known commonly as non-probability convenience sampling (Yu & Cooper, 1983). The probability of accessing Division I FBS student-athletes at these particular institutions were greater than employing, for example, simple random sampling where each and every item in the population has an equal chance of inclusion and probability of selection (Babbie, 2010). Ultimately, the final six institutions were selected due in part to a) previously established relationships with athletic administrators who have access to student-athletes at these institutions; b) targeting institutions with athletics administrators who serve on, for example, the National Association for Academic Advisors for Athletics (N4A) Board of Directors, who are actively engaged in and support research benefiting the field of student-athlete academic support services and student-athlete development; and c) athletics administrators from institutions who were willing and able to see the study to completion.

Data Collection

Initially, seven schools were targeted in-person through a national convention and/or networking in the summer prior to study commencement in the fall. Of these seven schools, administrators from five of the schools were able to see the study through. Once Institutional Review Board (IRB) approval was obtained, the consenting administrators received an email with study materials and options for distribution, including a study introductory video link, student-athlete email, and a study flyer (See
Appendix B). The administrators were encouraged to share these materials in a way that was convenient for them, and were provided suggestions such as beginning of the year meetings, life skills courses/events, and displaying information within the academic unit.

Survey response rates were steady yet a greater sample size was desired. At 114 responses (eight of which did not meet study criteria), alternative strategies were employed in attempts to increase participation. Specifically, three more institutions were contacted in weeks six, seven, and eight of the study. A sixth institution was secured at week seven. During week eight, an email advertising the study to coaches and text message aimed at student-athletes was added to the options for distribution, undergoing both feedback from NCAA Division I FBS coaches and IRB approval (See Table 1). During week nine, the procedures were modified to allow hard copies of the survey to be distributed and these modifications were also submitted and approved by the IRB (See Appendix A; See Table 1).

The optional introductory video was uploaded to YouTube and included a brief introduction of the researcher, study purpose, procedures, compensation, confidentiality information, and contact information. The YouTube link was transformed into a memorable link (www.bit.ly/studyintroductoryvideo) using the Bitly URL Shortener and Link Management Platform (https://bitly.com/). The survey was created through the university’s design suite system, Qualtrics. The first page of the survey contained the optional study introductory video link, a link to the electronic Informed Consent PDF document, and yes or no consent checkbox options. Participants who provided their electronic consent were led to the second page or beginning of the survey. The survey was setup so participants who did not provide their electronic consent were automatically transferred to the end of survey. According to the survey results, zero instances of non-consent or selecting the no checkbox were recorded.

Compensation

Participants were informed of participation time, approximately less than 10 minutes, as well as study compensation within the study introductory video, Informed Consent document, and study emails. The 10-minute time frame was calculated based on piloting a hardcopy version of the survey with 12
undergraduate students prior to the dissertation proposal defense. Compensation approved by the IRB and advertised in these materials included: a) electing to enter into a multi-winner $15 Amazon gift card drawing (up to three winners per institution, up to 24 winners total); b) electing to receive a brief report of study findings, or practical tips, to be implemented during a student’s collegiate career; and c) institutional community service recognition for participation in a service activity benefiting the student-athlete success research base. In addition, individual consultation with the academic services and athletics department staff following the study to implement any practical application was approved, advertised to administrators, and disclosed in electronic communications.

Communications

The communications process began with distributing all study materials to the participating institutions at the beginning of the fall semester. Weeks three through five of data collection consisted of follow-up with the participating institutions. In weeks six through nine, additional communication options were explored and incorporated to increase study participation. A more detailed timeline is provided in Table 1. The communications were not entirely uniformed (e.g., Institution 1 was resent materials for the first reminder prior to Institution 3). These high-level administrators hold multiple responsibilities; therefore the timing of individual communications were dependent on their ability to communicate and assist with this process. For confidentiality purposes, institutions are labeled as Institution 1, Institution 2, Institution 3, Institution 4, Institution 5, and Institution 6. Institution 6 was added during week seven of data collection.
Table 1

Data Collection Study Timeline

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Communications</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 2</td>
<td>Distribution information and materials sent to administrators electronically</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td></td>
<td>Sent administrators hard copies of flyers to alleviate printing costs</td>
<td></td>
</tr>
<tr>
<td>3 – 5</td>
<td>Resent materials electronically (brief version) for first reminder</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td></td>
<td>Checked-in to see if materials were received</td>
<td>2</td>
</tr>
<tr>
<td>6 – 7</td>
<td>Brainstormed and piloted new data collection strategies with IRB approval</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Sent additional distribution options to coaches (email, text message)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Distribution information and materials sent to administrators electronically</td>
<td>6</td>
</tr>
<tr>
<td>8 – 9</td>
<td>Sent administrators additional distribution options</td>
<td>1, 2, 4, 5</td>
</tr>
<tr>
<td></td>
<td>Resent materials electronically (brief version) for first reminder</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Submitted IRB procedure modification to distribute hard copies of surveys</td>
<td>n/a</td>
</tr>
<tr>
<td>10 – 12</td>
<td>Distributed hard copies of the surveys</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Resent materials electronically (brief version) for final reminder</td>
<td>1, 4, 5, 6</td>
</tr>
<tr>
<td>13</td>
<td>Finished data collection; sent out IRB approved compensation items</td>
<td>1, 2, 3, 4, 5, 6</td>
</tr>
</tbody>
</table>

Instrumentation

The forthcoming section substantiates each instrument adopted for data collection, including a summary of the instrument, scoring information, and evidence of validity and reliability.

Demographic data. The only institutional demographic data collected was the institution itself. This information provides context on the number of participants from each of the six schools within the Pac-12 and Mountain West Conferences. The institutions spanned three geographical regions, including the Pacific Southwest, the Pacific Northwest, and the Rocky Mountain region. Individual student-athlete demographic information was also collected, including designation of main sport in college. By default, this simultaneously revealed gender by way of recording Men’s or Women’s teams. Additional demographic data included current academic and athletic standing, academic major, and how students describe themselves racially/ethnically. Demographic items can be sensitive in nature and potentially evoke an emotional response for participants. Careful consideration was given to this matter, and thus the latter items, academic major and racial/ethnic description, were strategically placed at the end of the survey. This was to avoid deterring participation or priming student-athletes in any way through answering sensitive questions upfront. Although subgroup comparisons were not made within the current
study, the data assisted in understanding the representation characteristics of participants, and may be used in future analyses.

**Academic performance.** Academic performance was measured by college cumulative grade point average (GPA). While other variables such as individual academic awards and scholarships can also be analyzed to assess academic performance (e.g., NCAA, 2012; NCAA, 2015c; Rankin et al., 2011), the criteria for these measures are deduced from overall GPA. Furthermore, according to Astin (1993a, 1993b), GPA is the most common outcome when evaluating undergraduate student achievement. The continuous variable GPA was split into high and low groups. A traditional median can be problematic, with respect to losing power and inconsistencies (Cohen, 1983). Gelman and Park (2008) recommend splitting a predictor into a three part, trichotomized variable coded as -1, 0, 1. The upper and lower parts were used to distinguish between high and low academic performances.

**Athletic performance.** The majority of the athletic performance research captures athletic experience (e.g., coach and athlete relationship), commitment to the athletic role, sport specific traits (e.g., trait confidence), or sport-specific statistics (e.g., Reese, 2005). The closest inclusive measurement derives from questions about athletic performance from Potuto and O’Hanlon (2007), Rankin et al. (2011), and the 2012 and 2015 NCAA GOALS studies. This study built on those items by creating an evaluation metric used to quantify athletic performance among Division I FBS student-athletes.

The questions used to quantify athletic performance throughout the literature were gathered from Potuto and O’Hanlon (2007), Rankin et al. (2011), and the NCAA GOALS metrics (2012, 2015). A preliminary inventory was shared with committee members Nancy Lough, Ed.D., Professor of Higher Education, University of Nevada, Las Vegas, Alice Corkill, Ph.D., Associate Professor of Educational Psychology, University of Nevada, Las Vegas, and Mark Guadagnoli, Ph.D., Professor of Neuroscience and Neurology, University of Nevada, Las Vegas. Once the preliminary inventory was reviewed and revised, an initial inventory was disseminated to 14 scholars across the nation asking for participation in the construction of a new athletic performance metric. The athletics scholars were selected based on their scholarly contributions and expertise in the field of intercollegiate athletics and higher education. Of the
original 14 scholars selected, 11 participated, including: Jean Boyd, Senior Associate Athletics Director, Arizona State University; Eddie Comeaux, Ph.D., Associate Professor of Higher Education, University of California, Riverside; Alice Corkill, Ph.D., Associate Professor of Educational Psychology & Higher Education, University of Nevada, Las Vegas; Magdi El Shahawy, Ph.D., Director of Student-Athlete Academic Services, University of Southern California; Riverside; Mark Guadagnoli, Ph.D., Professor of Neuroscience and Neurology and Director of Learning and Performance, University of Nevada, Las Vegas; C. Keith Harrison, Ph.D., Associate Program Director and Associate Professor of Sport Business Management, University of Central Florida; Nancy Lough, Ed.D., Professor of Higher Education, University of Nevada, Las Vegas; Lisa Rubin, Ph.D., Assistant Professor, Kansas State University; Dan Merson, Ph.D., Educational Research Consultant and Senior Research Associate, Rankin and Associates Consulting; Sue Rankin, Ph.D., Senior Research Associate in the Center for the Study of Higher Education and Associate Professor of Education, The Pennsylvania State University; and Derek Van Rheenen, Ph.D., Associate Adjunct Professor and Director of Cultural Studies of Sport in Education, University of California Berkeley.

The scholars were asked to rate five common items evaluating athletic performance. These items were derived from the literature and are provided in Appendix C. They included: Item 1) rating the percentage the student-athlete felt they were performing to full athletic potential, Item 2) roster status (i.e., playing time), Item 3) participation in NCAA postseason competition, Item 4) individual athletic awards, and Item 5) athletic scholarship. Items were ranked 1 – 5, with the number 1 representing the most important item for evaluating athletic performance, the number 2 representing the second most important item for evaluating athletic performance, and so forth. Three additional spaces were included in case the scholars felt there were any missing items. In addition, the scholars were also asked to provide constructive feedback and suggestions on the item and item responses.

Panelist revisions. Only one additional performance metric was suggested, individual sport statistics, receiving the number 1 rating by the expert panelist who suggested it. Typically, sport statistics have been used to quantity the performance of teams. The sample population of these studies were
typically one team (e.g., volleyball) which was appropriate in making comparisons for specific sports. The purpose of this study’s performance metric, however, was to quantify athletic performance inclusive of all Division I student-athletes and teams. While consideration of individual sport performance as a suggestion has merit, it was not integrated into the final athletic performance metric for this study.

Panelists also encouraged revisions to the way some of the items were written. Time frame content was added to item 1 (e.g., “Considering your athletic career…”), as well as item 3 (e.g., “In the past five years…”). Item 2 on roster status was rewritten to read more simply, and “if any” was added to Item 5 which referenced current athletic scholarship.

**Athletic performance scoring methods.** The rankings were analyzed using four different methods to ensure all possible scenarios were considered. Each of the four scoring methods were considered in the final ranking designation of the five athletic performance items. The consistency in each of the four scoring methods unified and strengthened the final ranking.

**Scoring method one.** The Borda Count method was used in this method, a prevalent technique for granting sports awards such as the college football Heisman Trophy and Major League Baseball Most Valuable Player. In Scoring Method One, six items were ranked, including the original five items plus the additional expert panelist suggestion. A point value was assigned to each of the six rankings in descending order with a zero point: Ranking 1 (5 points), Ranking 2 (4 points), Ranking 3 (3 points), Ranking 4 (2 points), Ranking 5 (1 points), Ranking 6 (0 points). These point values were multiplied by the number of votes each ranking received. For example, item four was Ranked 1 by four scholars (5 points * 4 scholars = 20 points), Ranked 2 by four scholars (4 points * 4 scholars = 16 points), Ranked 3 by no scholars (3 points * 0 scholars = 0 points), Ranked 4 by one scholar (2 points * 1 scholar = 2 points), and Ranked 5 by no scholars (1 point * 0 scholars = 0) for a weighted total of 38 points. The weighted total for each of the five items was divided by the number of panelists for a score of 4.22, the highest of the six items. This procedure was completed for each of the six items.

**Scoring method two:** The second scoring method considered the original five items plus the sixth item added by one panelist (sport specific statistics, Ranking 1) using a modified plurality rating method.
In a modified plurality rating, the highest ranked item is determined by the most first-place votes. The modified definition in this study indicates that in a situation where the number of first-place votes were tied (i.e., Items 1 and 5 with one first-place vote), the number of second-place votes determines the winner between the two items. In this case, Item 1 received two second-place votes, whereas Item 5 received only one second-place vote – therefore Item 1 moved ahead of Item 5. In this scoring method, the order of ranking from ascending to descending was Item 4 (four first-place votes), Item 2 (two first-place votes), Item 1 (one first-place vote, two second-place votes), Item 5 (one first-place vote, one second-place vote), and Item 3 (zero first-place votes).

**Scoring method three.** This scoring method used the same procedures as the first scoring method without considering the sixth item added by the panelist (sport specific statistics, Rated 1). Since sport-specific statistics were not applicable for this particular instrument, this item was removed and each of the scholar’s rankings moved up one position (e.g., the scholar’s second highest rated item became the highest rated item in place of sport specific statistics and so forth). A point value was assigned to each of the five rankings in descending order with a zero point: Ranking 1 (4 points), Ranking 2 (3 points), Ranking 3 (2 points), Ranking 4 (1 points), and Ranking 5 (0 points). These point values were also multiplied by the number of votes each ranking received. For example, item four was Ranked 1 by five scholars (4 points * 5 scholars = 20 points), Ranked 2 by three scholars (3 points * 3 scholars = 9 points), Ranked 3 by no scholars (2 points * 0 scholars = 0 points), and Ranked 4 by one scholar (1 point * 1 scholar = 1 point) for a weighted total of 30 points. The weighted total for each of the five items was divided by the number of panelists for a score of 3.3, the highest of the five items. This procedure was completed for each of the five items.

**Scoring method four.** The final scoring method used the same procedures as the second scoring method without considering the sixth item added by the panelist (sport specific statistics, Rated 1). Using the modified Plurality rating, the highest ranked item was determined by the most first-place votes, with number of second-place votes considered in the event of a tie. In this scoring method, the order of ranking from ascending to descending is Item 4 (five first-place votes), Item 2 (two first-place votes), Item 1 (one
first place vote, two second place votes), Item 5 (one first place vote, one second place vote), and Item 3 (zero first place votes). The table below summarizes the information from the four scoring methods, and the final decision as a result of the four scoring methods.

Table 2

<table>
<thead>
<tr>
<th>Scoring Methods and Item Rankings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method 1</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Ranking 1</td>
</tr>
<tr>
<td>Ranking 2</td>
</tr>
<tr>
<td>Ranking 3</td>
</tr>
<tr>
<td>Ranking 4</td>
</tr>
<tr>
<td>Ranking 5</td>
</tr>
</tbody>
</table>

Note: Item 1 – Potential; Item 2 – Roster Status; Item 3 – Postseason; Item 4 – Athletic Awards; Item 5 – Scholarship

**Instrument scoring.** The four scoring methods helped solidify what expert panelists deemed as the most important item quantifying athletic performance to the least important item quantifying athletic performance. Using the four scoring methods, the final rankings were as follows: 1) Individual Awards (Item 4), 2) Roster Status (Item 2), 3) Potential (Item 1), 4) Postseason (Item 3), and 5) Scholarship (Item 5). The results of the four scoring methods instilled confidence in choosing the final order, as there was consistency in the way the items fell regardless of methodology. Once the rankings were determined, the instrument was scored with the help of the committee co-chair measurement expert Dr. Alice Corkill.

Two point systems options were considered to determine both 1) the *point value* for the answer to each item response (e.g., 0 athletic awards = 0 points, 1 – 2 athletic awards = 2 points, 3 – 4 athletic awards = 4 points); and 2) the *emphasis points* for each of the five athletic performance items in order to capture importance (e.g., individual awards ranked first needed a stronger weighting than roster status ranked second). In adherence with solid measurement properties, the *point value* for each of the five items were equal distance apart from the value 10. Specifically, equal point distributions of 0, 2.5, 5, 7.5, and 10 were used for items 2 (Roster Status) and 5 (Scholarship); and equal point distributions of 0, 2, 4, 6, 8,
and 10 were used for items 1 (Potential), 3 (Postseason), and 4 (Awards). The “unsure” and “not applicable” item responses for Item 5 Scholarships were combined into one category for a point value of zero. This system leaves each item’s point value open to some interpretation. For example, one could dispute that a second team player (valued at 7.5 points) should receive much more than a practice player (valued at 2.5 points). However, the practice of using sound parametric properties did present limitations in the practical distribution of the points.

The emphasis points were determined also using equal point distributions of 10. Specifically, the highest ranked item (Item 4, Awards) was multiplied by 10, the second highest ranked item (Item 2, Roster Status) multiplied by 8, the third highest ranked item (Item 1, Potential) multiplied by 6, the fourth highest ranked item (Item 4, Postseason) multiplied by 4, and the last ranked item (Item 5, Scholarship) multiplied by 2. See table 3 for a summary of the point values and emphasis points.
Athletic Performance Metric: Point Values and Emphasis Points

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer, points (pts)</td>
<td>0 = 0 pts</td>
<td>Other = 0 pts</td>
<td>59% and below = 0 pts</td>
<td>0 times = 0 points</td>
</tr>
<tr>
<td>Answer, points (pts)</td>
<td>1 – 3 = 2 pts</td>
<td>Practice = 2.5 pts</td>
<td>60 – 69% = 2 pts</td>
<td>One time = 2 pts</td>
</tr>
<tr>
<td>Answer, points (pts)</td>
<td>4 – 6 = 4 pts</td>
<td>Third team = 5 pts</td>
<td>70 – 79% = 4 pts</td>
<td>Two times = 4 pts</td>
</tr>
<tr>
<td>Answer, points (pts)</td>
<td>7 – 9 = 6 pts</td>
<td>Second team = 7.5 pts</td>
<td>80 – 89% = 6 pts</td>
<td>Three times = 6 pts</td>
</tr>
<tr>
<td>Answer, points (pts)</td>
<td>10 – 12 = 8 pts</td>
<td>1st team = 10 pts</td>
<td>90 – 99% = 8 pts</td>
<td>Four times = 8 pts</td>
</tr>
<tr>
<td>Answer, points (pts)</td>
<td>13 + = 10 pts</td>
<td>- = 10 pts</td>
<td>100% = 10 pts</td>
<td>Five or more times = 10 pts</td>
</tr>
<tr>
<td>Emphasis</td>
<td>Multiply by 10</td>
<td>Multiply by 8</td>
<td>Multiply by 6</td>
<td>Multiply by 4</td>
</tr>
</tbody>
</table>

Note: An applied example of the point values and emphasis points for participant A was as follows: 1) Potential: 75% (4 points) * emphasis (6) = 24 points; 2) Roster Status: 2nd Team (7.5 points) * emphasis (8) = 60 points; 3) Postseason: Two times (4 points) * emphasis (4) = 16 points; 4) Awards: 1 – 3 (2 points) * emphasis (10) = 20 points; 5) Scholarship: High partial (7.5 points) * emphasis (2) = 15 points; Total: 135 points (sum of 24 points, 60 points, 16 points, 20 points, 15 points); Pts = points.

Athletic performance metric summary. In summary, the athletic performance metric was derived and scored using a six-step procedure: 1) Accumulate items within the literature used to quantify athletic performance; 2) Validate the metric through vetting by an expert panel, including ranking the items within the literature based on importance and providing item and item response feedback; 3) Triangulate by using multiple scoring methods to arrive at final item rankings; 4) Create point values for the individual item responses using sound parametric properties with equal distances between each item; and 5) Decide on emphasis points for each of the five athletic performance items based on expert athletic panel rankings; 6) Compute the point value for each item response multiplied by item emphasis points to arrive at a cumulative value for each participant’s athletic performance score.
The abovementioned procedures provide a continuous score distinguishing between high and low athletic performance. Similar to the academic performance metric, the athletic performance variable was used to divide the sample into a three part, trichotomized variable coded as -1, 0, 1 (Gelman & Park, 2008). The upper and lower portions were used to distinguish between high and low athletic performances.

**Beliefs about academic ability.** The eight-item questionnaire from Dweck’s *Self-Theories: Their Role in Motivation, Personality, and Development* (1999) textbook was used. This instrument was chosen over the prominent six-item Mindset scale used throughout the literature containing three entity theory statements (fixed mindset) and three incremental theory statements (growth mindset) – as well as the three-item scale containing three entity theory statements (Blackwell et al., 2007; Chiu et al., 1997). The eight-item questionnaire was used specifically because of the label *Self Form for Adults*, paralleling the age range of this study’s population. The scoring for this instrument followed procedures used in Blackwell et al. (2007), Dweck and Leggett (1988), and Hong et al. (1999) using eight questions instead of six. Participants indicated the extent to which they agreed with eight statements about intelligence on a 7-point Likert Scale (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree or disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree). Four of the eight items were reverse scored and a mean belief about academic ability score was calculated for the eight items. Even though the six-item scale used in the K-8 setting has sufficient internal reliability (.78) and test-retest reliability (.77) (Blackwell et al., 2007), reliability was needed for the eight-item scale. Therefore, a study was conducted by the researcher and Principal Investigator Dr. Alice Corkill in preparation for this dissertation study.

**Beliefs about athletic ability.** The Mindset scale has been adapted to measure multiple constructs, including athletic ability. Sarrazin et al. (1996) created the Sport Incremental Ability Scale (SIAS) to measure the mindset of adolescent athletes, substituting ‘sport ability’ for ‘intelligence’ based on procedures from Dweck and Henderson (1989). The internal consistency of this six-item scale was satisfactory with a coefficient alpha reliability of .71 (Sarrazin et al., 1996). The present study followed that procedure by using the eight-item Beliefs about Academic Ability scale from Dweck’s *Self-Theories:*
Their Role in Motivation, Personality, and Development (1999) textbook, substituting ‘athletic ability’ for ‘intelligence’. Participants indicated the extent to which they agreed with eight statements about athletic ability on a 7-point Likert Scale (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree). Four of the eight items were reverse scored and a mean belief about athletic ability score was calculated for the eight items.

Fall 2015 academic and athletic mindset study. The purpose of the Fall 2015 Academic and Athletic Mindset pre-dissertation study was to 1) determine whether student-athletes fell across the spectrum of having a growth and fixed mindset for both academic and athletic ability and 2) determine whether the eight-item Academic Mindset metric and eight-item Athletic Mindset scales were sufficiently reliable. The population included Division I FBS student-athletes (N = 100) from various teams within an institution located in the Pacific Southwest. The results revealed that student-athletes indeed fell across the spectrum of having a growth and fixed mindset for both academic and athletic ability. Participants tended to have more of a growth mindset towards athletic ability than towards academic ability. The coefficient alpha for all 16 items was .916. The coefficient alpha reliability for the eight-item Beliefs about Academic Ability was .881, and for the eight-item Beliefs about Athletic Abilities .910, respectively. These factors helped validate both the framework and instruments as viable for a dissertation study with this population.

Personal Growth Initiative. The original Personal Growth Initiative Scale (PGIS) was transformed into a multidimensional PGIS-II measure accounting for both cognitive and behavioral factors (Robitschek et al., 2012). There are four subscales of the PGIS-II, including: 1) Using Resources (three items; e.g., “I ask for help when I try to change myself), 2) Intentional Behavior (four items; e.g., “I take every opportunity to grow as it comes up”), 3) Planfulness (five items; e.g., “I set realistic goals for what I want to change about myself”), and 4) Readiness for Change (four items; e.g., “I can tell when I am ready to make specific changes in myself”). Participants rated how much they agreed or disagreed with each of the 16 statements. The 16 responses were recorded on a 7-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 =
agree, 7 = strongly agree). A score was calculated for each subscale by averaging the item scores. A mean total score was calculated by averaging the four subscale scores (Thoen & Robitschek, 2013). High mean scores on the PGIS-II indicate higher levels of Personal Growth Initiative, or a person’s active and intentional involvement in changing and developing as a person (Thoen & Robitschek, 2013). The reliability and validity of this instrument was satisfactory. Robitschek et al. (2012) reported a four-factor structure supported by confirmatory factor analysis. Test-retest reliability figures were .82, .67, .70, and .62 for one, two, four, and six weeks (Robitschek et al., 2012).

**Student-Athlete Experiences Inventory.** The Student-Athlete Experiences Inventory (SAEI) was developed to measure the experiences of collegiate athletes. It originates from the 136-item College Student Experiences Questionnaire (CSEQ; Pace & Kuh, 1998), known as the primary instrument capturing student experiences in higher education. The questions on the instrument ask about a diverse number of experiences, including items such as: initiating a formal oral class presentation, attending an athletic department sponsored personal development event, taking part in a discussion focusing on personal improvement and enrichment, discussing policies and issues related to campus activities and student government with another student, and informal interactions with professors. On the SAEI, participants were asked to indicate how often they had participated in an experience (e.g., attended an athletic department sponsored personal development event) on a four point scale where 1 = never, 2 = occasionally, 3 = often, and 4 = very often (Cox et al., 2004). The items within each factor (academic, social, and everyday experiences) were summed, divided by the number of items, and multiplied by 10 to obtain sub-scale scores (Cox et al., 2004). The score range is between 10 (low end) and 40 (high end) for each subscale, which quantifies the types of experiences among collegiate athletes (Cox et al., 2004). On the actual instrument, the questions from each of the three scales appear throughout the 39-items instead of appearing as three separate sections.

This instrument also has satisfactory reliability and validity data. Exploratory Factor Analysis on the SAEI led to a 39-item inventory with three factors: academic experiences, social experiences, and everyday experiences. In conjunction with the SAEI, the Student-Athlete Gains Inventory (SAGI) was
also created to establish the instrument’s criterion validity. All three factors, everyday experiences, and especially social and academic experiences, demonstrated meaningful practical and liberal arts gains on the SAGI (Cox et al., 2004). The 17-item SAGI established strong predictive validity. The coefficient alpha reliability values were satisfactory for all three factors, at .89, .79, and .82 (Cox et al., 2004).

Data Analysis

The variables chosen for analysis included two independent variables and six parametric dependent variables. This study investigated how four types of student-athlete performers differ on various internal factors, selected as dependent variables. The two independent variables are academics and athletics, each with two levels – high and low performance. The participants were assigned to four student groups, or between-group independent variables, based on their pre-existing athletic and academic performance: 1) high academic performance, high athletic performance; 2) high academic performance, low athletic performance; 3) low academic performance, high athletic performance; and 4) low academic performance, low athletic performance. The internal factors were chosen as dependent variables because the study goal was to investigate how various types of performers differ on the following set of internal factors: 1) Academic Mindset; 2) Athletic Ability Mindset; 3) Personal Growth Initiative; 4) Academic Experiences; 5) Social Experiences; and 6) Everyday Experiences. The dependent variables are derived from three psychological constructs: 1) Implicit Theories of Self, 2) Personal Growth Initiative, and 3) Student-Athlete Experiences. These dependent variables are adaptable and relate to a student’s current mental state at a single point in time (Mayers, 2013).

Ethical Considerations

The Institutional Review Board (IRB) proposal included a complete Research Protocol, Informed Consent document, and copies of all study materials – including the study instrument, all study communications (e.g., emails, flyer), and study introductory video. The IRB package was submitted in the summer of 2016 following a successful proposal defense during the spring semester. Requests for protocol revisions were addressed and the package was deemed Exempt August of 2016. For clarity,
Exempt status means the study had very little, if any, associated risk and fit one of the six federally designated Exempt review categories.

The pre-dissertation Fall 2015 Academic and Athletic Mindset study was reviewed and approved with minimal revisions by the IRB. This dissertation study mirrored that pilot study in terms of the data collection procedures, survey instrument demographic information, academic and athletic performance questions, and internal constructs. The IRB protocol and procedure experience obtained during the pre-dissertation study assisted with developing the protocol and procedures for the present study.

Summary

This chapter focused on the research methodology used to examine this study’s purpose, examining differences among different types of student-athlete performances through the lens of internal factors. The research design, data sources and collection procedures, materials, data analysis, and ethical considerations were discussed. The Expert Panel: Athletic Performance Metric and Student-Athlete Inventory are included for review in Appendix C and Appendix D, respectively.
CHAPTER 4

RESULTS

The purpose of this study was to compare internal factors, which were categorized as psychological (academic and athletic Mindset), developmental (Personal Growth Initiative), and behavioral (Student-Athlete Experiences) between different types of Division I FBS academic and athletic performers. Primary data was collected from student-athletes representing six institutions within the Pac-12 and Mountain West conferences. Data were collected through the Qualtrics Survey Software Suite, downloaded as a CSV file, coded in Microsoft Excel, and imported into SPSS statistics software (Version 22). Multivariate Analysis of Variance (MANOVA) was used to determine how performers from four categories – 1) high academic, high athletic; 2) high academic, low athletic; 3) low academic, high athletic; and 4) low academic, low athletic – differed on academic and athletic Mindset, Personal Growth Initiative, and academic, social, and everyday experiences.

The initial section provides a description of the entire sample ($N = 331$), followed by demographic and profile characteristics of the population. The second section describes the research instruments, presenting the performance variables and instrument descriptive statistics. This is followed by two sections detailing the processes and procedures of the multivariate analysis. The chapter concludes with a summary of the results.

Sample

There were 331 participants in this study. The actual distribution number is unknown as survey dissemination was dependent upon the assistance of athletics administrators. Participants were obtained from six Division I FBS institutions, including four from the Pac-12 (Institutions 1, 2, 5, and 6) and two from the Mountain West Conference (Institutions 3 and 4). These schools represented both the Power Five and Group of Five conferences with geographical locations spanning the Pacific Northwest, Pacific Southwest, and Rocky Mountain Regions.

Demographic and Profile Characteristics
The demographic and profile characteristics of participants in this study included: 1) their institution, 2) sport, 3) current academic and athletic standing, 4) declared major area of study, and 5) how participants described themselves racially/ethnically. Items 4 and 5 were strategically placed at the end of the survey due to sensitivity with these types of questions.

**Institutions.** To respect anonymity, the name of the institution was withheld and renamed with generic coding. For the overall sample, 10.0% of the student-athletes (33) were from Institution 1 (Pac-12), 18.1% from Institution 2 (60; Pac-12), 36.6% from Institution 3 (121; Mountain West), 13.0% from Institution 4 (43; Mountain West), 10.6% from Institution 5 (35; Pac-12), and 10.9% from Institution 6 (36; Pac-12). In addition, 0.9% of the participants (3) did not identify an institution or were from a school outside of the six participating institutions. This information is captured in Table 4.

Table 4

<table>
<thead>
<tr>
<th>Institution Representation as a Percentage</th>
<th>Institution</th>
<th>N = 331</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pac-12</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institution 1</td>
<td>33</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>Institution 2</td>
<td>60</td>
<td>18.1</td>
<td></td>
</tr>
<tr>
<td>Institution 5</td>
<td>35</td>
<td>10.6</td>
<td></td>
</tr>
<tr>
<td>Institution 6</td>
<td>36</td>
<td>10.9</td>
<td></td>
</tr>
<tr>
<td><strong>Mountain West Conference</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institution 3</td>
<td>121</td>
<td>36.6</td>
<td></td>
</tr>
<tr>
<td>Institution 4</td>
<td>43</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not specify / outside of the six participating schools</td>
<td>3</td>
<td>0.9</td>
<td></td>
</tr>
</tbody>
</table>

**Main sport.** The sample of student-athletes represented 29 of the 30 Division I sponsored sports by the Pac-12 and Mountain West conferences. In this study, each sport was coded with a number between 1 and 30, and 31 was assigned to student-athletes who did not indicate their sport. Table 5 shows the representation from each sport compared to the 2015-16 demographic data for both the Pac-12 and Mountain West conferences. Based on sport participation, the percentage of male participants was 40.79% (135), while the percentage of female participants was 57.10% (189). The option “other sport” was indicated by 2.11% of the population (7 participants). Multi-sport athletes comprised 8.2% (27) of the population, designated by participant’s selection of more than one sport. The 8.2% multi-sport athletes
included 0.3% Baseball and Football (1), 0.3% Beach Volleyball and Cross Country (1), 0.3% Beach Volleyball and Women’s Volleyball (1), 1.5% Cross Country and Men’s Track and Field (5), and 5.8% Cross Country and Women’s Track and Field (19).

Table 5

<table>
<thead>
<tr>
<th>Sport Representation as a Percentage (Compared to the Pac-12 and Mountain West Conferences)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sport</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1. Baseball</td>
</tr>
<tr>
<td>2. / 3. Basketball</td>
</tr>
<tr>
<td>4. Beach Volleyball</td>
</tr>
<tr>
<td>5. Cross Country</td>
</tr>
<tr>
<td>6. Field Hockey</td>
</tr>
<tr>
<td>7. Football</td>
</tr>
<tr>
<td>8. / 9. Golf</td>
</tr>
<tr>
<td>10. / 11. Gymnastics</td>
</tr>
<tr>
<td>12. Lacrosse</td>
</tr>
<tr>
<td>13. / 14. Rowing</td>
</tr>
<tr>
<td>15. Rugby</td>
</tr>
<tr>
<td>16. / 17. Soccer</td>
</tr>
<tr>
<td>18. Softball</td>
</tr>
<tr>
<td>19. / 20. Swimming &amp; Diving</td>
</tr>
<tr>
<td>21. / 22. Tennis</td>
</tr>
<tr>
<td>23. / 24. Track &amp; Field</td>
</tr>
<tr>
<td>25. / 26. Volleyball</td>
</tr>
<tr>
<td>27. / 28. Water Polo</td>
</tr>
<tr>
<td>29. Wrestling</td>
</tr>
<tr>
<td>30. Other Sport</td>
</tr>
</tbody>
</table>

Note: The Pac-12 and Mountain West Conference data is from the 2015-16 academic year and can be accessed from the NCAA’s demographic database; sports that are not represented by the conferences or within the study are left blank; conference data on indoor and outdoor Track & Field were averaged for the Track & Field designation within this study. Fonts in bold type are from this study (N = 331).

**Academic and athletic standing.** The criteria for study eligibility was student-athletes with junior, senior, or postgraduate standing. The rationale was that juniors, seniors, and postgraduates would have well-established academic and athletic credentials to measure performance. There were unique situations that unfolded during the data collection process, such as participation from academic juniors in their second year of athletic eligibility. In some rare cases, academic seniors were in their second year of athletic eligibility. Student-athletes who were juniors academically yet in their second-year athletically were not included in the analysis, because they would not have had as many opportunities to earn points.
on the athletic performance metric as their upper-class peers. Academic sophomores who reported being in their third year of NCAA athletic eligibility, however, were included. This was due to the GPA indicator having less variability than the athletic performance metric. See Table 6 for academic and athletic standing statistics.

Table 6

<table>
<thead>
<tr>
<th>Academic and Athletic Standing as a Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standing</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Academic</td>
</tr>
<tr>
<td>Sophomore</td>
</tr>
<tr>
<td>Junior</td>
</tr>
<tr>
<td>Senior</td>
</tr>
<tr>
<td>Postgraduate</td>
</tr>
<tr>
<td>Athletic</td>
</tr>
<tr>
<td>Third-year</td>
</tr>
<tr>
<td>Fourth-year</td>
</tr>
<tr>
<td>Fifth-year</td>
</tr>
</tbody>
</table>

Note: Academic freshman, and athletic first- and second-year student-athletes did not meet study criteria and are not reported.

Declared major area of study. In the overall sample (N = 331), several academic major areas were represented. The top five declared major areas of study in ascending order comprised Business, Engineering, Social Sciences, Liberal Arts, and Communications. New academic fields were created for participants who did not fit into the 15 pre-determined categories. The additional academic fields for the sample (N = 331) were as follows: 0.9% (3) Human Services (i.e., Counseling, Marriage & Family Therapy), 0.6% (2) Environmental Studies, and 3.0% (10) Urban Affairs (i.e., Criminal Justice, Public Policy). While this study did not make inferences based on academic major, the information helps portray the study sample even if it’s not an element directly related to the analysis. Table 7 exhibits the 18 declared major areas of study for this sample.
Table 7

Declared Major Areas of Study

<table>
<thead>
<tr>
<th>Major Areas of Study</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounting, Marketing, Computer Information Sciences</td>
<td>71</td>
<td>21.5</td>
</tr>
<tr>
<td>Communications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary, Secondary, Special</td>
<td>17</td>
<td>5.2</td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise, Sports, Kinesiology</td>
<td>45</td>
<td>13.6</td>
</tr>
<tr>
<td>Honors College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel Administration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospitality Management</td>
<td>9</td>
<td>2.7</td>
</tr>
<tr>
<td>Humanities and Fine Arts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music, Religion, English</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interdisciplinary, Psychology, English, Philosophy, Anthropology</td>
<td>25</td>
<td>7.6</td>
</tr>
<tr>
<td>Physical Sciences and Mathematics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td>13</td>
<td>3.9</td>
</tr>
<tr>
<td>Professional Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing, Occupational Therapy, Pre-Medical</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>Social Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History, Sociology, Political Science</td>
<td>27</td>
<td>8.2</td>
</tr>
<tr>
<td>Life Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology, Plant, Zoology, Physiology</td>
<td>11</td>
<td>3.3</td>
</tr>
<tr>
<td>Undecided</td>
<td>10</td>
<td>3.0</td>
</tr>
<tr>
<td>Double Major</td>
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<td></td>
</tr>
<tr>
<td>Honors College</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Humanities</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>4</td>
<td>1.2</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>Professional Studies</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Human Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counseling, Marriage &amp; Family Therapy</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td>Environmental Studies</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Urban Affairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criminal Justice, Public Policy</td>
<td>10</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Note: New academic fields were created (Human Services, Environmental Studies, and Urban Affairs) for participants who answered “Other Academic Field” and did not fit into the 15 pre-determined categories.
Participant self-identification. This study relied on language and categories the NCAA uses for research when eliciting participant race and ethnicity. Based on self-reported data by student-athletes at their respective institutions, 88.82% (294) of the 331 student-athletes disclosed this information. Table 8 depicts a breakdown of participant descriptions, as well as the distribution from the Pac-12 and Mountain West Conferences.

Table 8

<table>
<thead>
<tr>
<th>Description of Self</th>
<th>%</th>
<th>Pac-12</th>
<th>MWC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>African American or Black</td>
<td>7.9</td>
<td>19.36</td>
<td>10.75</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>6.9</td>
<td>3.27</td>
<td>3.96</td>
</tr>
<tr>
<td>Hispanic or Latino American</td>
<td>9.7</td>
<td>7.34</td>
<td>6.53</td>
</tr>
<tr>
<td>Native American or Indian American</td>
<td></td>
<td>0.59</td>
<td>0.70</td>
</tr>
<tr>
<td>White, non-Hispanic (includes Middle Eastern)</td>
<td>58.3</td>
<td>47.56</td>
<td>56.93</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>4.2</td>
<td>5.65</td>
<td>5.55</td>
</tr>
<tr>
<td>Not listed</td>
<td></td>
<td>9.85</td>
<td>8.63</td>
</tr>
<tr>
<td>Prefer not to respond</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not respond</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The Pac-12 and Mountain West Conference data is from the 2015-16 academic year and can be assessed from the NCAA’s demographic database; descriptions that are not represented by the study are left blank. Fonts in bold type are from this study (N = 331).

Other coding. There were a few instances where participants’ profile information required further interpretation. To maintain the integrity of the data file, definitive rules were established and used without exception: an average was calculated when a range was provided for the open-ended items athletic potential or athletic awards; the plus symbols (e.g., 2+) added to athletic awards were dropped and the number only (e.g., 2) was used; for the questionnaires completed on paper, when two back-to-back SAEI item responses were selected (e.g., 2., occasionally, and 3., very often), the lower option was used; when two answers one apart from each other were selected, the middle option was used (e.g., if 2., occasionally and 4., very often were selected, 3, very often was taken). In addition, roster spots designated as ‘between first and second team’ in the “other” category were assigned an average of the first and second team points.

Research Instruments
In this section, the mean scores and standard deviations for the academic and athletic performance variables, as well as the mean scores on the three instruments are presented.

**Performance Variables and Instrument Descriptive Statistics**

**Academic performance.** The mean score for academic performance (GPA) was 3.272 ($n = 323$, $SD = .529$) with scores ranging from 1.97 to 4.00 based on a 4-point scale. Of the entire sample ($N = 331$), 64.7% (214) of the participants had earned academic awards in college or at their current institution. The mean for academic awards was 2.10 ($n = 325$, $SD = 2.436$) with awards ranging from 0 (116 participants) to 14 (1 participant). Academic awards were used as another participant criteria to support GPA. However, this statistic was not used for the analysis.

**Athletic performance.** The mean score for the 5-point athletic performance metric was 148.61 ($n = 323; SD = 50.902$) with scores ranging from 0 to 285 (lowest possible score = 0; highest possible score = 300). There were five items that comprised the athletic performance metric, including 1) Potential, 2) Roster Status, 3) Postseason, 4) Athletic Awards, and 5) Scholarship. The adjusted 4-point athletic performance metric (without postseason) used for the analysis had a mean score of 133.45 ($n = 323$, $SD = 46.468$) with scores ranging from 0 to 260 (lowest possible score = 0; highest possible score = 260). The following paragraphs provide descriptive statistics for the entire sample across all five athletic performance metric items.

**Item 1.** This open-ended response item asked participants to rate the percentage they felt they were performing to their full athletic potential (1-100%). The mean answer for this item was 77.17% ($N = 331$, $SD = 19.749$) with ranges from 0% (6 participants, 1.8% of the population) to 100% (32 participants, 9.7% of the population). The athletic potential percentages in the form of ranges is displayed in Table 9.
**Item 2.** Of the entire sample \((N = 331)\) with respect to roster status or playing time: 64.7% (214) selected first team (for example, you start in a team sport or compete in your preferred events in individual sports); 17.2% (57) selected second team (for example, regular substitute in a team sport, often compete in some event in individual sports); 10.6% (35) rated themselves as third team (participate in practice but compete infrequently); 3.6% (12) rated themselves as practice or training but not competing; 3.0% (10) selected other status and 0.9% (3) had missing information. The mean for this item was 1.62 \((n = 328, \text{SD} = 1.019)\), which was between first and second team.

**Item 3.** With respect to postseason competition, 35.3% (115 participants) reported never attending postseason, 13.3% (44) reported one appearance, 17.5% (58) reported two appearances, 11.2% (37) reported three appearances, 6.0% (20) reported four appearances, and 16.6% (55) reported five or more appearances. The mean for this item was 2.88 \((N = 331, \text{SD} = 1.854)\) or nearly two postseason appearances (option 2 was one time, option 3 was two times).

One of the recurring issues that emerged was a misreporting of the athletic performance metric item “postseason”. Specifically, many participants were reporting more postseason appearances than was possible (e.g., a sophomore athletically reporting four postseason appearances, when only two were possible [one per year per sport]). This occurred with approximately 28 cases, plus an additional 20
participants were flagged as potentially providing incorrect information. It is possible that cases beyond the 15.0% identified (48 participants) had similar misreported postseason errors.

The postseason item and points were excluded from the analysis to promote accuracy with the athletic performance score. The elimination of this item was supported by the expert panelists who rated postseason as the second least important of the five items. Therefore, the athletic performance score used for the analysis included the composite score of the other four items (potential, roster status, athletic awards, and scholarship). As mentioned, those not meeting study criteria were excluded from the analysis for a modified sample. The main effects based on performance and academic and athletic mindset, personal growth initiative, and experiences, along with consideration of possible interaction effects, were determined. The categorical independent performance variables were coded as high or low depending on whether they fell in the upper third or lower third of the sample scores.

**Item 4.** Of the entire sample \((N = 331)\), 39.3\% (130) of the participants had earned one or more athletic awards in college or at their current institution compared to 60.7\% (201) who had not earned any athletic awards. The mean for this item was 1.16 athletic awards \((N = 331, SD = 2.123)\). Table 10 displays the full range of awards.

<table>
<thead>
<tr>
<th>Award(s)</th>
<th>N = 331</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>201</td>
<td>60.7</td>
</tr>
<tr>
<td>1</td>
<td>42</td>
<td>12.7</td>
</tr>
<tr>
<td>2</td>
<td>32</td>
<td>9.7</td>
</tr>
<tr>
<td>3</td>
<td>21</td>
<td>6.3</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>4.5</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>1.2</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>1.2</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

| Item 5.** For athletic scholarship, 34.4\% (114) of the participants indicated full athletic scholarship, 19.6\% (65) selected high partial athletics scholarship (51\% and above), 20.2\% (67) selected |
moderate partial athletics scholarship (50% and below), 18.7% (62) selected walk-on, 4.8% (16) selected not applicable, 1.2% (4) selected unsure, and 0.9% (3) did not provide an answer. This equates to nearly 75% (246) of the population (n = 328) earning some percentage of athletic related financial aid. The average answer was 2.43 (n = 328, SD = 1.328), or between high partial athletics scholarship (51% and above) and moderate partial athletics scholarship (50% and below).

**Major study variables.** The means, standard deviations, potential ranges, and actual ranges for each of the dependent variables are presented in Table 11.

Table 11

*Psychometric Properties of the Major Study Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Range Potential</th>
<th>Range Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindset</td>
<td>326</td>
<td>5.092</td>
<td>.948</td>
<td>1.00-7.00</td>
<td>1.88-7.00</td>
</tr>
<tr>
<td>Academic</td>
<td>326</td>
<td>5.162</td>
<td>1.057</td>
<td>1.00-7.00</td>
<td>1.88-7.00</td>
</tr>
<tr>
<td>Athletic</td>
<td>326</td>
<td>5.024</td>
<td>1.121</td>
<td>1.00-7.00</td>
<td>1.88-7.00</td>
</tr>
<tr>
<td>Personal Growth Initiative</td>
<td>312</td>
<td>5.508</td>
<td>.837</td>
<td>1.00-7.00</td>
<td>3.13-7.00</td>
</tr>
<tr>
<td>Readiness to Change</td>
<td>313</td>
<td>5.537</td>
<td>.837</td>
<td>1.00-7.00</td>
<td>3.00-7.00</td>
</tr>
<tr>
<td>Planfulness</td>
<td>314</td>
<td>5.552</td>
<td>.911</td>
<td>1.00-7.00</td>
<td>1.80-7.00</td>
</tr>
<tr>
<td>Using Resources</td>
<td>314</td>
<td>4.977</td>
<td>1.297</td>
<td>1.00-7.00</td>
<td>1.00-7.00</td>
</tr>
<tr>
<td>Intentional Behavior</td>
<td>314</td>
<td>5.834</td>
<td>.837</td>
<td>1.00-7.00</td>
<td>3.00-7.00</td>
</tr>
<tr>
<td>Student-Athlete Experiences</td>
<td>302</td>
<td>22.497</td>
<td>4.958</td>
<td>10.00-40.00</td>
<td>10.56-40.00</td>
</tr>
<tr>
<td>Academic Experiences</td>
<td>302</td>
<td>25.830</td>
<td>5.949</td>
<td>10.00-40.00</td>
<td>11.00-40.00</td>
</tr>
<tr>
<td>Social Interactions</td>
<td>302</td>
<td>25.489</td>
<td>5.522</td>
<td>10.00-40.00</td>
<td>11.00-40.00</td>
</tr>
<tr>
<td>Everyday Experiences</td>
<td>302</td>
<td>18.816</td>
<td>5.560</td>
<td>10.00-40.00</td>
<td>10.56-40.00</td>
</tr>
</tbody>
</table>

**Reliability for scales and subscales.** The internal consistency estimates for each of the three frameworks were sufficient. The coefficient alpha for the Mindset scale and subscales were as follows: .914 for the entire scale (items 1 – 16), .884 for items 1 – 8 representing academic Mindset, and .914 for items 9 – 16 representing athletic Mindset. The coefficient alpha values are consistent with the values obtained from the Fall 2015 Academic and Athletic Mindset pilot study conducted in preparation for this dissertation.

The coefficient alpha for the Personal Growth Initiative scale was .934 (items 1 – 16), .881 for the Planfulness subscale (items 1, 3, 5, 10, 13), .843 for the Readiness for Change subscale (items 2, 8, 11, 16), .867 for the Intentional Behavior subscale (items 4, 7, 9, 15), and .874 for the Using Resources
subscale (items 6, 12, 14). The coefficient alpha for the Student-Athlete Experiences Inventory was .934 (items 1 – 39), .802 for the Social Interactions subscale (items 1, 4, 8, 12, 16, 19, 23, 27, 31, 34, and 38), .901 for the Everyday Experiences subscale (items 2, 5, 7, 9, 11, 13, 15, 17, 20, 22, 24, 26, 28, 30, 32, 35, 37, and 39), and .831 for the Academic Experiences subscale (items 3, 6, 10, 14, 18, 21, 25, 29, 33, and 36).

**Statistical Analysis Part I**

Frequencies were calculated for the performance variables to determine the descriptive statistics for this data set. The GPA and athletic performance score frequencies were divided into three categories with the 33rd and 67th percentiles separating the bottom, middle, and top thirds of the distribution. For academic performance, the lower third GPAs ranged from 0.00 to 3.10, the middle third GPAs ranged from 3.10 to 3.521, and the upper third GPAs ranged from 3.521 to 4.00. For athletic performance without postseason, the lower third score ranged from 0 to 115.00, the middle third score ranged from 115.00 to 155.00, and the upper third score ranged from 155.00 to 260.00. In addition, the initial intent was to remove participants who scored in the 3.5 – 4.5 range on the Mindset assessments, a practice regarded as removing participants with ambiguous beliefs by Dweck and her colleagues (Hong et al., 1999). However, by discarding the middle third on the Mindset assessments, there was a risk of cases falling near the mean being grouped into different high and low categories – therefore implicating the mean score and changing the composition of the high and low performing groups. The between-subject factors groups were as follows: 1) academic performance lower third (n = 62), 2) academic performance upper third (n = 59); athletic performance lower third (n = 35), athletic performance upper third (n = 86).

An independent-samples t-test was conducted to ensure the two performance groups (low and high) for both academic and athletic performance were statistically different. The results demonstrate a significant difference between low academic performers ($M = 2.730, SD = .557$) and high academic performers ($M = 3.727, SD = .128$; $t_{(132)} = -14.096, p = .00$, two-tailed). According to Cohen’s (1988) interpretation of effect sizes, the magnitude of differences in the means (mean difference = -.998, 95% CI: -1.14 to -.856) was fairly large (eta squared = -0.777). There was also a statistically significant difference
between low athletic performers \( (M = 81.69, SD = 31.309) \) and high athletic performers \( (M = 184.65, SD = 27.429; t_{(132)} = -20.291, p = .00, \text{ two-tailed}) \). Similar to the first example, the magnitude of differences in the means (mean difference = -102.959, 95\% CI: -112.996) was also fairly large (eta squared = -.868). These results indicate that the high and low performing groups were statistically different from each another.

**Correlations**

Pearson product-moment correlation coefficients were conducted for each of the scales and subscales to evaluate the relationships between dependent variables. The correlations are organized by dependent variable and the entire list of correlations displayed in Table 12.

**Mindset.** Academic Mindset was strongly correlated with the 16-item Mindset Scale, \( r_{(322)} = .860, p < .01 \), and moderately correlated with the 8-item Athletic Mindset scale, \( r_{(322)} = .510, p < .01 \). Athletic Mindset was also strongly correlated with the 16-item Mindset Scale, \( r_{(322)} = .878, p < .01 \).

**PGI.** The PGI subscale Change was strongly correlated with PGI subscale Planfulness, \( r_{(310)} = .779, p < .01 \), moderately correlated with PGI subscale Resources \( r_{(310)} = .532, p < .01 \), and moderately correlated with PGI subscale Intentional Behavior, \( r_{(310)} = .679, p < .01 \). The PGI subscale Planfulness was moderately correlated with PGI Subscale Resources, \( r_{(310)} = .564, p < .01 \) and PGI subscale Intentional Behavior, \( r_{(310)} = .670, p < .01 \). The final PGI subscale Resources was moderately correlated with PGI subscale Intentional Behavior, \( r_{(310)} = .515, p < .01 \).

**SAEI.** The SAEI subscale Social Interactions was moderately correlated with SAEI subscale Everyday Experiences, \( r_{(301)} = .669, p < .01 \). The SAEI subscale Academic Experiences was also moderately correlated with SAEI subscale Everyday Experiences, \( r_{(301)} = .612, p < .01 \). Finally, the SAEI subscale Social Interactions was moderately correlated with SAEI subscale Academic Experiences, \( r_{(301)} = .653, p < .01 \).

**Correlations between subscales.** There were non-significant correlations \( (r = >.300) \) between all other scale and subscale combinations. The pattern of moderately-to-strongly correlated variables
permitted breaking the dependent variables into three groups (academic and athletic Mindset, PGI, and SAEI) to conduct the multivariate analysis of variance.

Table 12

*Note:* For all scales, higher scores are indicative of stronger correlations. Mindset, Aca = Academic; Mindset, Ath = Athletic; PGI, Change = Readiness for Change; PGI, Plan = Planfulness; PGI Resources = Using Resources; PGI, Int Behav = Intentional Behavior; SAEI, Aca = Academic Experiences; SAEI, Soc Int = Social Interactions; SAEI, Every = Everyday Experiences. *p < 0.01.

**Statistical Analysis Part II**

A series of two-way, between-group, multivariate analyses of variance were conducted to explore differences in Mindset, Personal Growth Initiative, and Student-Athlete Experiences among different types of academic and athletic performers. Participants were divided into high and low performing groups based on two continuous performance variables: GPA and athletic performance scores. The initial plan was to also run a MANOVA to explore differences in Mindset, however the Box’s Test of Equality of Covariance Matrices was violated: $F(9, 24917.688) = 2.326, p < .05$. Therefore, the two academic and athletic Mindset dependent variables were treated univariately. The alpha level was reduced to .0253 per comparison to protect against Type I error inflation.

**Mindset**

The means and standard deviations for high and low performers on the dependent variables academic and athletic Mindset are displayed in Table 13.
Table 13

<table>
<thead>
<tr>
<th>High and Low Performers on the Academic and Athletic Mindset Dependent Variables</th>
<th>Academic Performance</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td></td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>Low M SD</td>
<td>n</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Academic Mindset</td>
<td>Low</td>
<td>15 5.3167 1.20533</td>
<td>20     5.4625 .77915</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Athletic Mindset</td>
<td>5.4095 1.01032</td>
<td>4.9875 .99414</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athletic Mindset</td>
<td>High</td>
<td>47 5.1998 .82364</td>
<td>39     5.2147 1.15776</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Academic Mindset</td>
<td>5.3431 .87518</td>
<td>4.8489 1.24147</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Athletic Mindset</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>5.2281 .92062</td>
<td>5.2987 1.04454</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Academic Mindset</td>
<td>5.3592 .90149</td>
<td>4.8959 1.15669</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Athletic Mindset</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Academic mindset.** There was a nonsignificant interaction between academic and athletic performance: $F (1, 117) = .108, p > .0125$. The main effect for academic performance was nonsignificant: $F (1, 117) = .162, p > .0253$. The main effect for athletic performance was nonsignificant: $F (1, 117) = .813, p > .0253$. The assumption of homogeneity of variance was upheld.

**Athletic mindset.** There was a nonsignificant interaction between academic and athletic performance: $F (1, 117) = .029, p > .0125$. The main effect for academic performance was nonsignificant: $F (1, 117) = .4.732, p > .0253 (p = .032)$. The main effect for athletic performance was nonsignificant: $F (1, 117) = .237, p > .05$. The assumption of homogeneity of variance was upheld.

**Personal Growth Initiative**

The means and standard deviations for high and low performers on the dependent variables Readiness for Change, Planfulness, Using Resources, and Intentional Behavior are displayed in Table 14.
### Table 14

**High and Low Performers on the Personal Growth Initiative Dependent Variables**

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
</tr>
<tr>
<td><strong>Academic Performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>14</td>
<td>5.5179</td>
</tr>
<tr>
<td>Change</td>
<td></td>
<td>5.5179</td>
</tr>
<tr>
<td>Planfulness</td>
<td></td>
<td>5.5143</td>
</tr>
<tr>
<td>Resources</td>
<td></td>
<td>5.3571</td>
</tr>
<tr>
<td>Behavior</td>
<td></td>
<td>5.6964</td>
</tr>
<tr>
<td>High</td>
<td>20</td>
<td>5.5375</td>
</tr>
<tr>
<td>Athletic Performance</td>
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<td></td>
</tr>
<tr>
<td>Change</td>
<td></td>
<td>5.5375</td>
</tr>
<tr>
<td>Planfulness</td>
<td></td>
<td>5.4900</td>
</tr>
<tr>
<td>Resources</td>
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<td>5.0000</td>
</tr>
<tr>
<td>Behavior</td>
<td></td>
<td>5.7750</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>58</td>
<td>5.6207</td>
</tr>
<tr>
<td>Change</td>
<td></td>
<td>5.6207</td>
</tr>
<tr>
<td>Planfulness</td>
<td></td>
<td>5.6586</td>
</tr>
<tr>
<td>Resources</td>
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<td>5.0690</td>
</tr>
<tr>
<td>Behavior</td>
<td></td>
<td>5.8190</td>
</tr>
</tbody>
</table>

**Note:** PGI, Change = Readiness for Change; PGI, Resources = Using Resources; PGI, Int. Behavior = Intentional Behavior.

The Box’s test of equality of covariance matrices was upheld, $F(30, 9965.635) = .623, p > .05$. There was a nonsignificant interaction for academic and athletic performers on Personal Growth Initiative: Wilks’ $\lambda = .982, F(4, 109) = .510, p > .05$. There was a nonsignificant main effect for academic performance: Wilks’ $\lambda = .979, F(4, 109) = .572, p > .05$. There was also a nonsignificant main effect for athletic performance: Wilks’ $\lambda = .971, F(4, 109) = .804, p > .05$.

**Student-Athlete Experiences**

The means and standard deviations for high and low performers on the dependent variables academic experiences, social interactions, and everyday experiences are displayed in Table 15.
Table 15

<table>
<thead>
<tr>
<th>Academic Performance</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
</tr>
<tr>
<td>Low</td>
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<tr>
<td>Everyday Experiences</td>
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<tr>
<td>Social Interactions</td>
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<td>.44070</td>
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<td>Academic Experiences</td>
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<tr>
<td>Athlete High</td>
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<tr>
<td>Performance</td>
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<td>Academic Experiences</td>
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<tr>
<td>Total</td>
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<tr>
<td>Everyday Experiences</td>
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<td>Social Interactions</td>
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</tr>
<tr>
<td>Academic Experiences</td>
<td>2.4502</td>
<td>.56237</td>
</tr>
</tbody>
</table>

The Box’s Test of Equality of Covariance Matrices was upheld for Student-Athlete Experiences, $F(18, 12080.270) = .924, p > .05$. There was a nonsignificant interaction for academic and athletic performers on SAEI: Wilks’ $\lambda = .948, F (3, 107) = 1.972, p > .05$, and a nonsignificant main effect for athletic performance: Wilks’ $\lambda = .998, F (3, 107) = .087, p > .05$. There was, however, a significant main effect for academic performance: Wilks’ $\lambda = .865, F (3, 107) = 5.565, p < .05, \eta^2 = .135$. The results of the between-subject follow-up analysis of variance revealed that high academic performers had a significantly larger number of academic experiences than the low academic performers: $F (1, 109) = 13.868, p < .05, \eta^2 = .113$. Academic performers did not differ on social interactions, $F (1, 109) = 1.502, p > .05$ or everyday experiences, $F (1, 109) = 1.072, p > .05$.

**Summary**

The purpose of this chapter was to present the results of the study. The chapter began by outlining the study sample, including demographics and profile characteristics based on institution, sport, academic and athletic standing, declared major area of study, and participant’s self-description. The second section described the research instruments – including the academic and athletic performance statistics, and the Mindset, Personal Growth Initiative, and Student-Athlete Experiences instrument descriptive statistics.
This section also included scale reliability information. The final two sections described the process and results of the statistical analyses chosen for the research question, revealing that high and low academic performers differ on types of academic experiences. Key findings will be discussed in Chapter 5.
CHAPTER 5
DISCUSSION OF RESULTS

This study examined differences in academic and athletic Mindset, Personal Growth Initiative, and Student-Athlete Experiences among student-athletes of various academic and athletic ability levels from six Division I FBS institutions. This final chapter provides an overview of the study and discussion of the results reported in Chapter 4. Also detailed are study implications for both theory and practice, along with limitations and recommendations for future research.

Overview of Study

For decades, research has focused on student-athlete academic performance and athletic performance independent of one another. This research focused on pre-college characteristics and external factors beyond students capabilities – including policy, relationships between the student and department personnel, and scholarships, to name a few. Researchers have spent time looking at psychological characteristics as they pertain to academics or athletics, but the literature has not been as robust, and both academics and athletics are studied independently.

In the early 2000s, Dweck and her colleagues made groundbreaking advances when they discovered the benefits of incremental theories of beliefs, known as a growth mindset, relative to academic performance of students. Spieler et al. (2007) used the Mindset theory to test athletic performance of the K-12 population. While the Mindset literature has been revolutionary from an educational psychology standpoint, the current study was a first in addressing the academic and athletic Mindset within a sample of Division I FBS collegiate athletes. Furthermore, higher levels of Personal Growth Initiative have proven to provide benefits in populations of adults and college students, but have not been examined with college athletes. The Student-Athlete Experiences conceptual framework assesses the quantity of academic, everyday, and social interactions among student-athletes – but had not been expanded upon to assess differences in performance prior to this study.

One step further, academic performance is unequivocally measured by GPA and graduation rates, yet the definition of collegiate athletic success – on an individual level – is less defined. Using team
statistics (e.g., Reese, 2005) fails to capture the essence of an individual student-athlete’s success. This study contributes to the knowledge base, therefore, through multiple lenses: assessing both the academic and athletic performance of student-athletes, providing a measure to help quantify athletic performance, and testing important psychological, behavioral, and developmental frameworks with respect to student-athlete success in higher education.

Therefore, the purpose of this national study was to examine how academic and athletic performers of various ability levels differ on psychological, developmental, and behavior-based frameworks chosen to reflect internal factors. The study used the following research question to guide the study:

1. How do academic and athletic performers of various ability levels differ on academic Mindset, athletic Mindset, Personal Growth Initiative, and Academic, Social, and Everyday Experiences?

A two-by-two Multivariate Analysis of Variance (MANOVA) was used to analyze the data collected from six Division I FBS institutions. MANOVA is appropriate when examining group differences on a set of two or more dependent variables. The study sample was comprised of 331 student-athletes from four Pac-12 and two Mountain West Conference institutions representing the Power Five and Group of Five conferences. Upperclassmen including junior, senior, and postgraduate student-athletes were targeted due to longer performance history and, therefore, more quantifiable measures reflecting their performance.

The expectations entering this study were that high academic and athletic performers, compared to low performers, would emanate more of a growth mindset towards academic and athletic ability; display higher levels of active and intentional involvement in changing and developing as a person as conveyed on the Personal Growth Initiative scale; and have different types of academic experiences, social interactions, and everyday experiences as defined by the Student-Athlete Experiences Inventory. The results of the study were analyzed through the theoretical and conceptual frameworks guiding the primary research question. Based on study representativeness demonstrated in the similarities between this sample and the two major conferences, these results are likely to generalize well within other
Division I FBS student-athlete samples. However, further research must be conducted around performance and internal factors examined in this study to affirm these results.

**Discussion of the Results**

This section will succinctly review the findings and provide interpretation through the perspective of the student-athlete success literature detailed in the second chapter. Although not all variables were statistically significant, there were meaningful differences between high and low academic performers on academic experiences. This study also contributed an athletic performance metric that can be used and improved upon to quantify individual athletic performance in higher education, irrespective of sport. Lastly, based on an identified need within the scholarly literature, understanding performance as it relates to internal factors was a key question in this study. The Mindset, Personal Growth Initiative, and Student-Athlete Experiences frameworks have extended these analyses as a result of the higher levels of achievement associated with this population.

There were also peripheral findings that emerged from the study, including the finding of a predominantly growth mindset among the study sample. Even so, scores on the mindset and athletic performance metrics indicate that there is room to grow – which seems plausible given these athletes also display high levels of Personal Growth Initiative, or active and intentional involvement in changing and developing as a person. Furthermore, much of the literature points to negative relationships between athletic participation and academic performance (e.g., P. Adler & P.A. Adler, 1985). Athletes within this study who perform at higher levels athletically do not necessarily have fewer academic experiences. The following discussion is organized into four sections: performance variables, academic and athletic Mindset, Personal Growth Initiative, and Student-Athlete Experiences.

**Performance Variables**

**Academic performance.** This study used self-reported cumulative GPA to assess academic performance by asking, “What is your cumulative grade point average (GPA) in college?” Due to the eligibility guidelines enforced by the NCAA, student-athletes are well aware of their GPA because of the role it plays in their athletic eligibility. This increased the confidence of using self-reported GPA in this
study. The mean score for academic performance (GPA) was 3.272 (\(n = 323, SD = .529\)) with a median of 3.380.

The GPAs reported in this study indicate a population that was high achieving: 83.28% of the sample (\(n = 323\)) had a GPA greater than 3.0, with nearly 40% (39.00%; 126 participants) earning a GPA greater than 3.5. On the other hand, only 16.72% of the population (54 participants) had a GPA under 3.0, with 7.12% (23 participants) falling below the NCAA recognized at-risk rate of 2.5. Only three participants (1.9%) had GPAs lower than 2.00, the NCAA minimum GPA requirement for graduation prior to the fourth and fifth years of enrollment (NCAA, 2017). To put the academic performance rate of this sample in perspective, a 3.00 GPA will earn student-athletes recognition on both the Pac-12 and Mountain West Academic All-Conference teams (Pac-12 Awards, 2017; MWC Academic All-Conference, 2017). In addition, the 126 student-athletes with GPAs above a 3.5 will also earn recognition on their institutions Dean’s List.

On the basis of this analysis, the question can be raised: Are the student-athletes who fell into the lower performing category of this study by definition low performing? With 83.28% of the sample holding a GPA above a 3.00, it is difficult to justify the low performing group as truly low performing. The mean GPA among the low performing group in this sample was 2.75, a quarter of a point above the 2.50 benchmark. Traditionally within the athletic academic advising field, a 2.50 GPA mark and below is when a student-athlete is considered to be at-risk. On the other hand, the high performing group earned a mean GPA of 3.529, a benchmark of excellence evidenced by conference and regional awards, Dean’s List notoriety, and an indicator of academic scholarships. Previous research, though, asserts that students who perform well in educational settings are more likely to return surveys (Higher Education Research Institute, 1992). This finding aligns with the follow-through of primarily high performers on this survey, which included incentivizing participation with practical performance tips. Porter and Whitcomb (2005) reiterate that academic performance (GPA) and student engagement are salient factors in survey participation. This supports the premise that lower performing student-athletes are, perhaps, less likely to participate in an additional voluntary task (i.e., survey participation) on top of their mandated
responsibilities. The academic performance findings are discussed in the context of Mindset, PGI, and Student-Athlete Experience in forthcoming sections.

**Athletic performance.** While intercollegiate athletics is widely celebrated across institutions of higher education, how student-athletes are evaluated for their athletic performance is not commonly understood. Recognizing a need to contribute to this body of knowledge, athletic performance items were extracted from the literature, vetted by an expert panel of scholars, and evaluated using an equidistant point system to create an individual, quantitative indicator of athletic performance. The athletic performance items in rank order importance included: 1) Athletic Awards; 2) Roster Status; 3) Potential; 4) Postseason; and 5) Scholarship. The item addressing postseason participation was deemed problematic and removed from the analysis. These items received a point allocation emphasis based on how the expert panel ranked them.

A few conclusions can be drawn about this first-time metric. With a mean score nearly in the middle at 133.45 and a median score of 140.00 (n = 323; SD = 46.468), there was representation from both ends of the spectrum among study participants: 16.1% (52 participants) earned the lower third of 0 – 87 points, while 65.0% (209 participants) or nearly two-thirds fell in the middle range of 88 – 174 points. Only 19.2% of participants earned a score between 175 – 260, or the upper two-thirds of possible points. This distribution is unlike academic performance in that a majority of the scores fall around the mean – whereas, with academic performance, a majority of GPA scores are on the upper-end of the scale. Like academic performance, these findings will be substantiated as it relates to Mindset, PGI, and Student-Athlete Experiences.

**Academic Mindset**

There were no significant differences between academic and athletic performers on the academic Mindset framework. Within this study, 260 of the participants (n = 326) or nearly 80% of the sample (79.75%) displayed a growth mindset towards academic abilities. The absence of differentiation was further captured by only 7.98% of the population (26 participants) displaying a fixed mindset towards their academic abilities, with scores ranging between 1.0 and 3.5 on the 7-point Likert-type scale. About a
fifth of the population at 19.33% (63 participants) held ambiguous beliefs towards their academic abilities. In summary, about one in four student-athletes (27.3%; 89 participants total) demonstrated a fixed mindset or ambiguous beliefs towards their academic abilities.

**Predominantly growth mindset.** This predominance of a growth mindset with respect to academics was an unexpected result given the mindset literature on differences in academic performers in the K-12 and college settings (e.g., Blackwell et al., 2007; Dweck, 1999; Dweck & Leggett, 1998; Mueller & Dweck, 1997). Within the fall 2015 pilot study ($N = 100$), there was an equal distribution of growth and fixed mindset among academic and athletic performers – albeit from one school, whereas six schools were represented within this study. Furthermore, Dweck conveys a typical breakdown of 40-40-20: in that 40% of a classroom population will have a growth mindset, 40% will have a fixed mindset, and 20% will display ambiguous beliefs towards their academic abilities (Dweck, 2008). These two supporting points led to the expectation there would be a balanced representation of growth versus fixed mindset. Furthermore, the predominantly academic growth mindset among this population is a different narrative from some of the negative stereotypes (e.g., Sailes, 1993) of student-athlete performance and behavior in the classroom.

Supplemental analyses were conducted to determine if the unexpected mindset result could be explained by significant differences in academic Mindset between Pac-12 and Mountain West Conference student-athletes. Student-athletes from the Pac-12 and Mountain West conferences had mean academic mindset scores of 5.1045 ($n = 162, SD = 1.12537$) and 5.2196 ($n = 161, SD = .99480$) respectively, where scores closest to 7.00 indicate an incremental (growth) theory of beliefs. A follow-up independent samples t-test showed a nonsignificant result, $t(321) =-.974, p = .331$, two-tailed. This suggests combining the two qualitatively different conferences did not impede the results.

**Academic prestige and standing.** This study focused on collegiate athletes at the height of their academic and athletic careers. Half the study sample (49.6%) came from the Pac-12 conference, with four of the 12 conference schools included in the top 25 of the 2017 U.S. News Best National Universities ranking (U.S. News & World Report, 2017). Comprised of 15 indicators of academic excellence, the
rankings comprise graduation and retention rates (22.5%), undergraduate academic reputation (22.5%), student selectivity (12.5%), and graduation rate performance (7.5%; U.S. News & World Report, 2017). Given the selectivity factors, these institutions may require more growth-oriented behaviors to matriculate and be successful in the higher education setting. Furthermore, these participants have accumulated multiple semesters of success and retention as they have progressed to junior, senior, or postgraduate standing.

**GPA.** The findings of a predominantly growth mindset towards academic ability parallel the high GPAs among this study population. There was conclusive evidence of increased academic motivation and performance among students who displayed incremental theories of beliefs (Growth; Dweck, 1999; Henderson & Dweck, 1990). In addition, when a growth mindset is taught to students, increases in college GPA have been prevalent among African American and White college students (Aronson et al., 2002), with evidence to support increases in grades among middle school students as well (e.g., Blackwell et al., 2007; Good et al., 2003). Some of the noble traits of the growth mindset – including grit, perseverance, and long-term goals – have been shown to predict college students’ GPA (Duckworth & Quinn, 2009). Pac-12 student-athletes had a slightly (but not significantly) higher mean GPA at 3.310 ($n = 162, SD = .590825$) over Mountain West Conference counterparts at 3.236 ($n = 160, SD = .465863$), aligning with the preceding comments about academic prestige. Assessing each institution’s admissions benchmarks, the average GPA of freshman Pac-12 admits was above a 3.5 GPA, while the admissions standards of the Mountain West Conference schools averaged 2.75. Interestingly, one of the former schools stated ‘personal qualities like resilience’ as one of the top personal characteristics of desirable applicants – one of the main tenants of the Mindset framework.

**Potential for growth.** The average academic mindset for participants in this study was 5.1619 ($n = 326, SD = 1.5731$) where a score of 7.00 represents the highest end of the growth spectrum. These findings suggest that there is still an opportunity to improve mindsets in this population. Dweck and her colleagues have encouraged those in a growth mindset to continue reinforcing those beliefs (Dweck, 2007). This practice may help combat a phenomenon Dweck and colleagues refer to as a “false growth
mindset” (Dweck, 2015). A “false growth mindset” is the acknowledgment of holding a growth mindset, but acting and speaking in ways that are contradictory.

**Supporting evidence for non-cognitive variables and performance.** The internal factors contributing to academic performance were reviewed throughout Chapter 2 with a call to further investigate characteristics that can be adapted to students to facilitate performance. These non-cognitive factors included positive self-concept (e.g., Sedlacek & Adams-Gaston, 1992), preference for long-term goals (e.g., Ting, 2009), and the role of hope in predicting semester GPA (e.g., Curry et al., 1997). On the basis of high GPAs (83.28% of the sample over a 3.0; 39.00% over a 3.5) and prevalence of a growth mindset (79.95% of the sample holding a growth mindset towards academic ability), this study helps underscore a growth mindset as an internal factor among academically high performing student-athletes in higher education. The existing internal factors, plus the investigation of Mindset, help in validating non-cognitive variables and their relationship to academic trends among this population.

**Athletic Mindset**

There were nonsignificant differences between high and low athletic performers on athletic Mindset. Interestingly, it was the academic performers who came close to a difference in athletic Mindset. The statistical analysis was not significant ($p = .032, p > .0253$), however it was interesting. Low academic performers may have more of an athletic growth Mindset compared to their higher performing peers, however additional research would need to be conducted to determine the statistical reliability of this possibility. Nevertheless, this phenomenon can be traced back to the group membership literature synthesized in Chapter 2, suggesting athletic performance and sport dedication takes precedence for some collegiate athletes (Pascarella et al., 1995). P.A. Adler and P. Adler (1991) found this to be true among high profile male athletes who faced pressure to strengthen athletic commitments at the expense of academic endeavors. Similar sentiments were expressed among female student-athletes who adjusted their once idealistic academic aspirations upon entering the high stakes environment (Meyer, 1990). The isolated athletic cultures depicted in these studies align with other literature documenting the strain of balancing competing academic and athletic role commitments (e.g., Snyder, 1985).
For some athletes, a high-level commitment to their sport is pervasive to their identity and being – and it may very well be the one thing in their life they feel they can improve. Keeping these circumstances at the forefront, lower performing athletes may turn to their athletic endeavors as an outlet for personal gratification and success and may view these activities with a different mentality. Division I intercollegiate athletics affords athletes the opportunity to receive favorable coach-to-player ratios and often one-to-one coaching. This individualized training and scaffolding of support could help promote the process-oriented state of mind highlighted in a growth mindset, especially from coaches whose philosophy is grounded in progressing athletes. This experience is very different from that of a college classroom or lecture hall. In an undergraduate environment, faculty do not have the opportunity to spend individualized time developing students in their classroom in the same way that is required on the playing field. For some athletes, a high-level commitment to their sport is pervasive to their identity and being – and it may very well be the one thing in their life they feel they can improve.

**Predominantly growth mindset.** Unexpectedly, a predominant proportion of the study population also held a growth mindset with respect to their athletic abilities. Nearly replicating the results of academic mindset, 65.3% of the population demonstrated a growth mindset towards athletic abilities. Only 8.00% of the population, or 26 participants, had a fixed mindset about their athletic abilities (identified as scores between 1.0 and 3.5 on the 7-point Likert-type scale). For this variable, 87 participants or 26.7% of the population – compared to 63 and 19.33% on the academic side – displayed ambiguous beliefs towards their athletic abilities. Ambiguous beliefs are defined as scores between 3.5 and 4.5, exemplifying uncertainty about the beliefs one holds about their Mindset (Hong et al., 1999). Despite these tendencies towards an athletic growth mindset, 80.8% of the scores fell in the lower to middle third of the athletic performance metric. These findings could be interpreted to indicate that although student-athletes tended to have a growth mindset towards athletic ability, there is room for improvement based on athletic performance scores.

**Fixed mindset among elite athletes.** Dweck’s research has moved beyond academia and into the sport realm – and other theories surmise that a fixed mindset may be present among highly talented
athletes. In this study, nearly half the participants that scored in the top 15% on the athletic performance metric held ambiguous beliefs or a fixed mindset towards athletic ability. In a recent podcast discussion, Dweck discussed the possibility of top performers matriculating to professional levels as a result of early dedication and abilities, despite holding a fixed mindset (Dweck & Whitney, 2016). While performing at high levels, they may display characteristics such as the need to prove oneself, difficulty bouncing back from setback, and focusing on the individual versus the team – the antithesis of a growth mindset (Dweck & Whitney, 2016). These athletes may also demonstrate a fragile ego as a result of getting by on talent, making adaptability to coaching and instruction difficult (Dweck & Whitney, 2016). This raises the question: while a high-level athlete may rise to the top level athletically, are they actualizing their full potential? Dweck (2006) references a young athlete driven initially by love of the game and avid practice in John McEnroe, who lost these virtues due to excessive pressure by his father. Despite being a tremendously talented athlete physically, he may have had the potential to be even better with development of a growth mindset (Dweck & Whitney, 2016).

In one of the first studies translating beliefs about intelligence to the athletic setting, Sarrazin et al. (1996) examined sport ability beliefs about goal orientations and social concepts of athletic ability in children. Both cross-sectional and experimental research (e.g., Spray, Wang, Biddle, Chatzisarantis, & Warburton, 2006) verified Dweck’s theory on implicit beliefs in the sport context. The results of Sarrazin et al. (1996) showed favorable links between a mastery goal orientation (over task) and subsequent incremental theory of beliefs (growth mindset). The approach used to assess performance in this study, however, was through five quantifiable athletic achievement indicators. Therefore, the results based on the five items may differ from how athletes approach their athletic process, such as the example in Dweck and Leggett (1998).

**Potential for growth.** A majority of the research sample embodied a growth mindset at the time of this study – but they were still earning only about half of the points they were capable of earning on the athletic performance metric which considers athletic awards, roster status, scholarship, and potential ($M = 133.45$ out of a possible 260 points). Thus, middle range or high-level performers operating within fixed
beliefs may be capable of much more, evidenced by the athletic performance scores in this study. While the majority of student-athletes displayed a growth mindset towards athletic abilities, over a third of the population (34.7%) scored between the fixed and ambiguous end of the athletic mindset scale. Unlike academic mindset, there was a slightly greater contrast between the athletic mindset of the low and high athletic performers at 4.972 and 5.159 respectively. Acknowledging a score of 7.00 is on the high end, there is room for improvement despite scoring in the growth category.

The passages above illustrate the predicament of a high performer with limiting beliefs, yet there is another type of athlete – and one that we tend to focus on in the literature – in understanding lower levels of performance (e.g., Rankin et al., 2011; Gaston-Gayles, 2009; McCormick, 1993; Sellers, 1992). This study resembles that practice by dividing the population into high and low performers. On an application level, there is a tendency to focus on influencing low performers to work toward the top. For example, hall of fame UCLA softball coach Sue Enquist coined the ‘33 percent rule’ outlining a lower, middle, and upper third that exists on each team, in the classroom, and in life. Enquist, along with other top coaches, encourages players to ‘join the top third’ or ‘the bubble of high standards’ (Williams, 2010). Lower performers may not necessarily be unmotivated; they simply may have been misguided on how they can live their lives. It is important to look at mid-to low-level performers who may be having average thoughts and subsequently taking average actions.

Throughout her groundbreaking Mindset work, Dweck cites illustrious athletes who did not rest on talent, but constantly ‘stretched’ themselves and ultimately exemplified a growth mindset (The Olympic Coach Magazine, 2009). There are also testaments of high-profile teams, such as the USA Women’s Volleyball team or the NBA’s Miami Heat, who have implemented the scientific approach and have seen it pay dividends. Mental skills coaches from the reigning MLB World Series Champion Chicago Cubs feature Mindset training as their official indoctrination into the organization. And while growth-oriented behaviors are prevalent among top athletes, it is unclear from an empirical standpoint where they fall on the mindset spectrum. These examples are shared as evidence that while the Mindset theory is prolific, there is still a need for experimental study of mindset among collegiate and professional
athletes. Other research points to an honors thesis where beliefs about athletic ability were examined among Stanford athletic teams in *The Mindset of a Champion* (2017) article, as well as a study mentioned with college soccer athletes’ perceptions of coaches Mindsets in *The Olympic Coach Magazine* (2009). These were both central to the conversation, but attempts to find the actual publications were unsuccessful. One dissertation study did yield a sample of varsity and club student-athletes, the latter not a focus of this study, from one large southeastern university with overwhelmingly implicit (growth) beliefs at 89.5% (Shaffer, 2014). The empirical evidence on the Mindset of athletes above the K-12 level remains limited, although this study contributes to our understanding of both the academic and athletic mindset among elite college athletes of prominent institutions.

**Personal Growth Initiative**

The majority of student-athletes rated themselves highly on the 7-point Personal Growth Initiative Scale. The analysis confirmed this and a nonsignificant result between high and low academic and athletic performers ensued. This is not entirely surprising as scholarly literature ties athletic participation positively to personal growth and interpersonal skills (e.g., Astin, 1993a). Aries et al. (2004) determined that high-commitment athletes consistently report they have grown as a person, pursued new interests, and experienced personal growth related to time spent with teammates on and off the field (Richards & Aries, 1999). The athletic identity alone may play a large part in student-athletes personal development because involvement with sport enhances leadership qualities, confidence in attaining short and long-term goals, and self-reliance (Melendez, 2006).

**Relationship to Mindset.** Historically, Personal Growth Initiative has demonstrated statistical and intuitive connections to Mindset theory. Robitschek (1998) demonstrated that the PGI scale has a moderate positive relationship with an internal locus of control, a prominent trait among growth-minded individuals. According to Dweck, the focus on internal abilities, or what one controls in one’s life, surpasses a focus on external forces beyond one’s control. In addition to internal locus of control, assertiveness and instrumentality were also moderately to strongly correlated with PGI ($r = .56, r = .41$, and $r = .45$, respectively). Likewise, independent self-construal, or the extent to which the self is defined
as independent or interdependent with others, was moderately correlated with PGI (Robitschek, 2003).
Ryff (1989) also concluded that participants reporting higher levels of growth reported low levels of
unintentional growth or growth that was not based on effort \( (r = 0.50) \). Dweck’s growth mindset is
predicated on the role of effort and learning, which is accelerated by challenge and failure. In addition to
the ties with Mindset, higher levels of PGI have been associated with greater personal identity and growth
in multiple domains (Robitschek, 2013).

While these studies support the relationship between high levels of Mindset and PGI, the
statistical relationship within this sample reveals conflicting evidence. Specifically, the highest correlation
observed between Mindset and PGI in this study was modest, at best \( (r = 0.270) \). Even though both the
Mindset and PGI constructs are related to similar indicators, the two instruments are measuring different
psychological constructs. These results would suggest a separation of the two scales, with the large-scale
data within this study to support that case.

Another interesting discovery was among the PGI subscale Using Resources, with the lowest
average of the four subscales \( (n = 314, M = 4.9766, SD = 1.29722) \) falling at least 0.58 to 0.86 points
below Readiness to Change, Planfulness, and Intentional Behavior. A follow-up paired sample t-test
showed statistically significant differences between Using Resources and each of the three subscales: PGI
subscale Using Resources and PGI subscale Change \( (M = 0.56339, SD = 1.10861; t_{(312)} = 8.991, p < .01,\)
two-tailed); PGI subscale Using Resources and PGI subscale Planfulness \( (M = 0.57576, SD = 1.08534;\)
\( t_{(313)} = 9.400, p = .00, \text{ two-tailed} \)); and PGI subscale Using Resources and PGI subscale Intentional
Behavior \( (M = 0.85777, SD = 1.12501; t_{(313)} = 13.511, p = .00, \text{ two-tailed} \)). While the results on the PGI
Using Resources subscale are statistically significant from the other PGI subscales, the results should be
interpreted cautiously because the large sample set may be influencing the test statistic.

One explanation for the lower score pertains to student-athletes habituating within their primary
group of membership, detailed in Chapter 2. Ironically, this low scoring trend also emerged in the
Student-Athlete Experiences subscale everyday experiences. Everyday experiences in the SAEI range
from visiting a career center to participating in campus social events with other students and scores were
6.67 to 7.01 points lower \( (n = 302, M = 18.816, SD = 5.560) \) than social interactions \( (n = 302, M = 25.489, SD = 5.521) \) and academic experiences \( (n = 302, M = 25.830, SD = 5.949) \).

**Student-Athlete Experiences**

The SAEI developed by Cox et al. (2004) determined that two of the three experience factors – academic and social interactions – were decidedly more predictive of scholarly gains versus the factor titled assorted experiences (renamed as Everyday experiences in this study). The authors also posited that their work be further investigated with samples from more than one institution and relatively equal numbers of members from all sports and genders. These factors were considered in the present study and Cox et al.’s (2004) findings were mirrored. Specifically, higher academic performers had a greater number of academic experiences compared to lower performing students in this study.

**Types of academic experiences.** Many of the items on the academic experiences subscale can be interpreted as individual or solo activities, for example: using a computer or library as a resource to conduct a literature search or find academic journals for classes, working on iterations of assignments, studying textbook and other outside readings, using a dictionary or thesaurus, and using the library as a study space. Two of the 10 items involved outside interaction, involving faculty in both instances: seeking feedback from a friend or professor relative to written work and making an appointment to visit with an instructor during office hours. The faculty experiences overlap with the findings of the importance of faculty-student interaction detailed in numerous studies (Comeaux & Harrison, 2007; Tinto, 1987; Astin, 1993b; Rankin et al., 2011). The independent focus, however, is contrary to research on students born after 1990, where instructors describe challenges in managing the amount of involvement and feedback demanded by the millennial generation (U.S. Chamber Foundation, 2012). Above all, coaches want student-athletes to perform – and this research encourages involvement as a key piece toward that end in the student-athlete’s academic and student development.

**Practical steps towards prioritizing experiences.** The call to integrate student-athletes into the general campus community is widely undisputed (Miller & Kerr, 2002; Killeya-Jones, 2005; Marx et al., 2008). In addition, the NCAA’s involvement in efforts to integrate student-athletes into the general
student body has been well documented. These efforts include compliance and policy amendments
towards hours spent competing and other team related functions (Marx et al., 2008). For example, the
number of hours student-athletes spend on their sport per week has been a topic of debate over the last
few decades. Paralleling the portion of this study dedicated to experiences, new proposals have been put
forward to reduce the time student-athletes spend on Countable-Athletic Related Activities (CARA) and
closely monitor Required Athletic Related Activities (RARA; New, 2017). With the power to adopt their
own rules known as “autonomy proposals”, Pac-12 authorities state further management of the CARA
and RARA legislation is “meant to enhance student athletes’ full experience on campus” (New, 2017,
para. 2). There is support from the NCAA GOALS studies of 2006, 2010, and 2015 suggesting players,
especially from high profile sports, are far exceeding the 20 hours of time allocated to their sport per
week. Legislation to be voted on mid-year (2017) includes restricting athletics-related activities other than
competition between off hours and limitations in the off-season and pre-season time commitments. The
Power Five schools including two from this study can decide whether to adopt the imposed legislation
(NCAA, 2017). The issue, Marx et al. (2008) states, is that while these legislative efforts are
commendable, “scholars, practitioners, the NCAA, and university authorities have heretofore paid
minimal attention to the lived experiences of student-athletes” (para. 9 in Discussion).

Athletic departments have worked to remedy the deficiency of non-sport related experiences
through implementing “total person programs” designed to assist athletes in holistic pursuits (Cox et al.,
2004). Some of the challenges with this programming, more commonly referred to as student-athlete life
skills programs, are that they are well-attended by students who are likely to seek out opportunities and
less well-attended by students in need of tools that will help them take advantage of opportunities. In
addition, the efficacy of the programming is not always known and programming is infrequently rooted in
data driven practices. Nevertheless, these programs provide value and help students to develop a sense of
self outside the athletic realm, which can also be promoted through a variety of experiences. Cox et al.
(2004) actually reference the SAEI as a tool to measure the effectiveness of these programs in terms of
facilitating academic and personal development. The focus of singular programs reiterates the importance
of a skill or knowledge within the context of the event, but is perhaps limited in follow-up. A more idealistic format is programming spanning the course of a semester in the form of weekly classes, seminars, or workshops. The continuity in regular classes around a cohesive theme can help promote various student-athlete experiences, especially when these expectations are embedded in a syllabus.

**Academic experiences and social interactions.** Even though there were nonsignificant differences between high and low academic performers in this study on social interactions, the average number of experiences were nearly identical: participants scored a 25.83 out of 40.00 on academic experiences ($n = 302$, $SD = 5.94871$) and a 25.49 out of 40.00 on social interactions ($n = 302$, $SD = 5.52188$). Another way to interpret these numbers: student-athletes within this study were maximizing 64.58% and 63.72% of the possible points on academic experiences and social interactions, respectively. Looking at the social interactions subscale within the SAEI, the well-rounded athlete is admired – one who: offers their own opinion (item 1), discusses a topic with someone who embraces a philosophy or life-style different from their own (item 23), or has a serious discussion on debatable topics such as politics or religion (item 12). To engage in these types of activities, a certain depth and understanding of self has to exist. Other items on the social interactions subscale pertain to a student-athletes relationship and immersion with peers. A combination of the words ‘with another student’ is mentioned in seven of 11 items – with one item explicitly denoting ‘students who were not athletes.’ It was unclear whether the students who participated in this study considered ‘another student’ as someone other than a fellow athlete. Only one of the 11 items reference athletic department personnel, in ‘talking with a close friend or coach about personal things.’

Regardless, the relevance of meaningful relationships emerged as a theme among the social interactions scale. These findings are traced back to Tinto (1987) and Astin (1993b) capturing traditional student involvement with other students as important factors for success in higher education. And in more recent decades, this study’s findings coincide with previous studies that found meaningful interactions and investment with peers outside of the athletic department as important to academic success (Comeaux & Harrison, 2007). Gayles and Hu (2009) detail interactions with students as influential to gains in
learning and communication. It appears that high academic performers in this study were more immune to the academic performance deterrents of athletic peer influence noted in previous studies (P.A. Adler & P Adler, 1991; Astin, 1984; Rishe, 2003).

**High levels of athletic performance and experiences.** Athletic performers, on the other hand, did not demonstrate any differences between performance and types of academic, social, and everyday experiences. Much of the literature points to a strong athletic emphasis diminishing academic pursuits. Student-athletes report the pressure of choosing athletics over academics, citing coaches’ influence as a motivating factor (Sage, 1985; NCAA, 2011). This literature implies that athletic performers may have lower numbers of experiences. Within this study, however, high athletic performers did not have a statistically significant difference in experiences compared to low athletic performing peers. Furthermore, while the differences were nonsignificant, high athletic performers recorded more academic, social, and everyday experiences compared to low academic performers. This contradicts some of the belief that academic, social, and everyday activities detract from athletic performance or dissuades student-athletes from extra activity in the higher education landscape. Danish (1983) was one of the first researchers to introduce the relationship between optimal athletic performance and less time spent pursuing higher education related activities. This study would suggest, however, that high and low athletic performers do not differ in their experiences.

Drawing on the academic success literature pertaining to this population, the significant findings help reiterate the importance of an enriched student experience contributing favorably to academic success. The experiences of collegiate athletes have been tied to increased feelings of inclusion and satisfaction in higher education; experiences have also been found to be an invaluable part of their personal development and discovery of desirable traits (Potuto & O’Hanlon, 2007). The NCAA’s GOALS and SCORE studies (2008) affirm that student-athletes who were actively engaged in the campus community benefited socially. This literature also supports better performance among student-athletes with greater engagement. Demonstrated community service was one meaningful engagement factor in performance (Sedlackeck & Adams-Gaston, 1992) and opportunities for psychosocial development were
found to be imperative for academic success among this population (Ting, 2009). P. Adler and P.A. Adler (1985) extended the literature base through their research, indicating that performance was based less on precollege characteristics and more on the structure of their college experiences.

**Implications**

This section will highlight this study’s contributions to the existing body of literature in terms of theoretical and applied implications. It will be followed by a discussion of the study’s limitations and a description of future research.

**Theoretical Implications**

This study provided an exploration of Division I student-athlete academic and athletic performance through the lens of largely unexplored frameworks with this population – academic and athletic Mindset and Personal Growth Initiative. The study also used the SAEI experiences inventory by investigating performance among a widespread population. Previous work either explored Mindset related to K-12 and high school students (e.g., Blackwell et al., 2007), K-12 athletes (e.g., Sarrazin et al., 1996) or non-college athletes (e.g., Dweck & Leggett, 1998); PGI related to non-college athletes (e.g., Robitschek & Kashubeck, 1999); explored academic performance only (e.g., Gaston-Gayles, 2004); examined a limited number of sports (e.g., P.A. Adler & P. Adler, 1991); focused on external factors (e.g., Rishe, 2003); or precollege characteristics (e.g., Lang et al., 1988). Follow-up studies can use these theoretical and conceptual frameworks to help verify differences between performers on the basis of Mindset, Personal Growth Initiative, and Student-Athlete Experiences, in addition to testing other internal factors that help to develop student-athletes. The Mindset and PGI scales could also be adapted to this specialized population of elite athletes that reside on the high end of both ranges.

In addition, a theoretical basis for assessing athletic performance inclusive of all Division I student-athletes across institutions of higher education was established. This allows parallel comparisons to be made not only among academic performers, but athletic performers as well. Study findings revealed this sample of student-athletes held largely incremental theories of beliefs (growth mindset) towards their academic and athletic abilities and demonstrated higher levels of Personal Growth Initiative. This study
also garners further theoretical support for academic experiences aligning with preparedness and performance. On the basis of the similarities in sport representation and personal profile characteristics, similar results may be expected among other Division I FBS populations spanning beyond the Pacific Northwest, the Pacific Southwest, and Rocky Mountain regions.

**Implications for Applied Practice**

Findings from this study provide additional incentive to help transform and evolve academic performance in student-athletes. Beginning in the 2019-20 academic year, a portion of Division I revenue will be allocated to schools with higher graduation rates (NCAA, 2017). Furthermore, college sport has implications for students, faculty, and higher education communities. Institutions are in overdrive to gain a competitive edge, evidenced by the historic strides in infrastructure, cost of attendance, media and broadcasting rights, among other elements that shape the arms race in college sports (Morales, 2016; Javier, 2016). With an emphasis on performance, theories like Mindset, PGI, and Student-Athlete Experiences can be assessed in life skills and student-athlete development programs to evaluate psychological, developmental, and behavioral improvements coinciding with academic and athletic performance.

Athletics support staff, coaches, and practitioners alike may be able to use this population’s Mindset and PGI findings to their advantage. Knowing that a growth mindset and inclination to evolve is prevalent among this population, athletes can be encouraged to continue learning, embrace challenges, persist in the face of setbacks, absorb criticism, and value effort as the path to mastery. These athletes may even be able to manage extra coaching and be held to expectations that stretch beyond their perceived limitations. When growth-oriented behaviors are exhibited, they can be validated and reinforced. The meaningful academic experiences finding can be used to further solidify the value of academic experiences as they relate to academic performance. Moreover, discovering that high performing athletes do not differ in terms of their experiences can be used to discredit the position that academics interfere with athletic development and vice versa. This study reached an important first step in
scholar and practitioner education and can be followed by application, assessment of this application, and continued support.

**Study Limitations**

The advantages of survey research include access to student-athletes from other institutions, the flexibility to participate at their convenience, and low costs. However, there are challenges that come with this particular line of inquiry, resulting in study limitations. One of the main issues was an absence of differentiation between high and low academic and athletic performers. An underlying issue to the restricted range may be self-selection bias. Simply, there are chances that some individuals are more likely to participate in an online survey than others (Wright, 2005). According to Wright (2005), this issue of some responding, while others ignore the survey communications, leads to a systematic bias. Research also supports that higher performers tend to fill out surveys, which aligns with the high GPAs and tendency for more growth-minded and improvement-oriented individuals in this study. In the future, accessing a captive audience where all student-athletes are available in one setting might be a way to avoid this limitation. In addition to self-selection bias, self-reported information can be problematic. While it is a widely acceptable practice to ask for participant GPA, there may be an issue with the construct validity of this procedure. Students with lower academic credentials tend to report their actual GPA less reliably, and in general, the extent to which students over-report their GPA is more prevalent than under-reporting (Kuncel, Credé, & Thomas, 2005).

Furthermore, the Mindset, Personal Growth Initiative, and Student-Athlete Experiences are inventories derived from psychological, developmental, and behavioral underpinnings, which may be subject to social desirability bias. Among the most common sources affecting the validity of survey research findings is social desirability (Nederhof, 1985). Many participants skipped items, which may or may not be related to the types of questions asked. The surveys, while for the most part administered online, were also completed in-person during the mid-data collection procedure modification to increase participation (See Appendix A). That said, social desirability bias has been found to be consistent
regardless of distribution. Specifically, Bradburn and Sudman (1979) report no difference in distortion of answers when varying the method of administration.

Finally, one additional limitation to the study involves the inaugural use of the athletic performance metric. Careful attention was placed on the development of the athletic performance survey instrument, including a pilot study to gain insight on survey flow and the reliability of the items. Despite these efforts, a few components of the athletic performance metric emerged as problematic and were recommended as iterations in forthcoming studies. Those iterations are substantiated in full in the forthcoming section of this dissertation.

**Limitations to the Athletic Performance Metric**

An expert panel of athletic scholars vetted the athletic performance portion of the instrument to address content validity. Despite the great expertise and efforts of expert scholars and committee members who helped vet this instrument, it was not immune to some first-time pitfalls. A few adjustments to the instrument encompass how some of the items were written.

**Item 3.** *During the past five years, how often have you participated in any post-season competition? Item Responses: 1) Never, 2) One time, 3) Two times, 4) Three times, 5) Four times, 6) Five or more times.*

Within this item, many participants indicated two, sometimes three additional years of post-season activity than were realistically possible (e.g., a junior in the third year of athletic competition reporting five or more postseason appearances). Even sports competing year-round (i.e., fall and spring) such as golf and swimming have one post-season opportunity per calendar year. Ultimately, the postseason item was discarded for purposes of analysis in order to ensure the most accurate athletic performance score possible. In addition, there were many participants who reported post-season numbers that were incorrect based on my familiarity with the institution and sports team. For example, there were participants who were a part of football teams from a prominent school who had participated in bowl games in recent years, yet the respondent neglected to mark any postseason competition. In the future, different language could be used with examples: *During the past five years, how often have you...*
participated in any NCAA postseason playoff competition (e.g., NCAA Regionals, NCAA Final Four). This situation could also be remedied by not including the item in the survey, but using it as an item in the athletic performance analysis by individually accessing each participant’s postseason history and recording the appropriate number.

**Item 4.** Have you earned any individual athletic awards in college or at your current institution? *Item Responses:* 1) Yes, 2) No; if yes was selected, a follow-up item was displayed which read: How many athletic awards have you earned in college or at your current institution? *Item Response:* open-ended. One issue that came to light was inaccurate reporting. Specifically, instead of following the prompt to insert a number, some participants used the award box to indicate the actual award(s) such as “All-American”, which they counted as one. Yet, if a participant earned All-American Honors, there are several follow-up awards that individual could earn such as: regional awards (e.g., All Region), conference awards (e.g., All-Conference, Offensive Player of the Year), university awards (e.g., Female Athlete of the Year), and team-based awards. Therefore, by reporting only one athletic award (All-American), that participant’s athletic award point allocation within the metric would not accurately capture the athletic award status. While this came to light only for individuals who used the box to write All-American, it could have been the case for others achieving All-American status who only indicated that single award by recording the number one. This situation could be remedied by adjusting the athletic award section to display a list of awards where participants could check their selection(s) versus the current open-ended response item where participants provided a number.

**Item 5.** Please indicate your current athletic scholarship award (if any), with options 1) Full athletic scholarship, 2) High partial athletics scholarship (51% and above), 3) Moderate partial athletics scholarship (50% and below), 4) Walk-on, 5) Not applicable, and 6) Unsure.

The term “not applicable” was chosen by some of the participants in this study. However, since each participant was from a Division I sponsored sport, options 1, 2, 3, 4, and 6 would have sufficed. The one instance where “not applicable” may be relevant is for postgraduates (finished with athletic eligibility) who were still working towards completing a degree when a coach was financially supporting
the fifth year of school to help promote degree completion. While this item may have been beneficial within the NCAA GOALS demographics study, it made it difficult to quantify within the athletic performance metric. Recommendations to remedy this issue for future studies are two-fold. First, replacing this item with a designation for postgraduates in different situations, with a prompt to state their situation in an open-ended response box. In addition, a designation for transfer students was not made. This is problematic in instances where two-four transfers (i.e., student-athletes transferring from a two-year college to a four-year college) consider potential, postseason, and athletic awards from seasons prior to reaching the Division I level. Since the study examined Division I FBS athletic performance, the athletic performance of these individuals may be skewed.

**Additional athletic performance metric limitations.** The athletic performance metric captures a snapshot of an athlete’s career compared to homogeneous peers. This does not take into account extraneous circumstances that student-athletes may face, including returning from injury or student-athletes with hardship waivers (i.e., medical red-shorts). Other extraneous circumstances span emotional or psychological hardships as a result of life altering events: death of a family member or significant other, breakups, compliance or deviant behavior issues, or alcohol or substance use – the latter well cited in the literature as problematic among this population (e.g., Donohue, Chow, Pitts, Loughran, Schubert, Gavrilova, & Allen 2015). The argument can be made that any of the aforementioned circumstances could affect the performance variables this study is attempting to measure. Another addition would include adding first-year and second-year student-athletes by weighting the metric to have an equal chance of falling into the high performance category, despite having less years of participation. The metric used an ordinal ranking to determine the priority of the athletic items and future iterations of the metric could include expert panel input on the point distributions.

**Future Studies**

The absence of athletic performance measurements in collegiate athletics speaks to the systematic difficulty in measuring individual actions of athletes compared to each other in dissimilar sports. The athletic performance metric introduced in this study was a first attempt to build a platform to measure
success and it can be used and built upon in subsequent studies. The recommendations for improvement are substantiated below, including detailed changes for how a few of the items were written. Another avenue for future research includes triangulating the athletic performance metric with coach’s ratings of athlete performance, namely with respect to a coach rating an athlete’s potential. This added element could provide further precision and depth beyond student-athletes’ perception of themselves. Coaches could also be assessed for their coaching style (i.e., performance driven or process driven) and determining relationships between athletes Mindset and levels of PGI. While incorporating coach’s ratings was considered for this study, they were not included due to some of the challenges expressed by the Institutional Review Board. In particular, IRB personnel were concerned that even with exhaustive attempts to maintain confidentiality, if the coach’s ratings were to become public knowledge, the draft stock of professional sports prospects could be affected.

This cross-sectional study captured the three internal factors among student-athletes in their respective careers at a single point in time. With the knowledge of these frameworks among Division I FBS student-athletes of various institutions, future studies could observe changes in Mindset and PGI of student-athletes pre- and post- interventions, while tracking any changes in academic and athletic performance. The Mindset and PGI interventions have demonstrated efficacy with college student populations. Similar to the suggestions of Robitschek et al. (1998), pre- and post-assessments might be better suited to measure actual behaviors. One example might be how a student aligned with their perspective of personal growth after a week of everyday student-athlete activities. An example of this can be found in Ryff’s (1989) study, where a global behavioral self-report measure was used to indicate the ways the participants actually achieved growth. The same could be true for the SAE inventory.

Dweck also noted that Mindsets have not been tracked over time, which bodes well for future research (Dweck & Whitney, 2006). In one of Dweck’s studies (Blackwell et al., 2007), teachers who were blind to the intervention condition evaluated changes in student motivation. In this context, coaches or student-athlete support staff members could be a part of the process through 360-degree evaluations.
Additional studies could also build on this information by examining how athletes in different sports or at different institutions vary on Mindset, PGI, and SAE based on performance.

Building upon the last technique of tracking the growth of the frameworks and performance over time, it would be helpful to incorporate underclassmen, one of the delimitations of the study. This is especially important because first-year and second-year student-athletes have the opportunity for more touch-points earlier in their careers. To encompass these participants, athletic performance criteria might need to be weighted differently to account for the difference in opportunity to earn points – such as the number of athletic awards or postseason competition compared to their more senior peers. Additional comparisons could also be made across sport type, revenue versus non-revenue sports, gender, major area of study, and how student-athletes describe themselves racially/ethnically.

**Summary**

The research employed psychological, developmental, and behavioral frameworks previously unused to examine academic *and* athletic performance among the Division I FBS population. Within this study, new avenues were explored in evaluating both the academic and athletic performance of Division I FBS student-athletes from six institutions within the Power Five and Group of Five conferences, including an athletic performance metric that was piloted to capture a more global understanding of individual athletic performance indiscriminate of sport. This research has potential to ignite a query for understanding different types of academic and athletic performers as it relates to qualities that can be developed by scholars and practitioners in the field of student-athlete development, ultimately in higher education.
INFORMED CONSENT
Department of Educational Psychology & Higher Education

TITLE OF STUDY: Academic and Athletic Beliefs, Personal Growth, and College Experiences

INVESTIGATOR(S): Alice Corkill, Ph.D., Nancy Lough, Ed.D., Marissa Nichols

For questions or concerns about the study, you may contact Marissa Nichols by phone or text at (909) 730-5246, Alice Corkill, Ph.D. at (702) 895-4164, and/or Nancy Lough, Ed.D. at (702) 895-5392.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794 or via email at IRB@unlv.edu.

Purpose of the Study
You are invited to participate in a research study. The purpose of the study is to understand student-athlete beliefs about academics and athletics, personal development, and college experiences.

Participants
You are being asked to participate in the study because you fit these criteria: you are a student-athlete with junior, senior, or postgraduate class standing from an NCAA Division I FBS institution.

Procedures
If you volunteer to participate in this study, you will be asked to do the following: respond to a series of demographic items, academic and athletic items, and your beliefs about academic and athletic ability, personal development, and college experiences. Sample questions include: (1) Considering your entire collegiate athletic career, rate the percentage (1 - 100%) you feel you are performing to your full athletic potential and (2) You have a certain amount of intelligence, and you can’t really do much to change it.

Benefits of Participation
There are minimal direct benefits to you as a participant in this study. The introspective and reflective questions could result in increased awareness about your academic/athletic career, beliefs, and college experiences. The increased awareness could lead to subsequent behavior modifications.

Risks of Participation
There are risks involved in all research studies. This study may include only minimal risks. For example, you may feel introspective or reflective when answering some questions or discomfort with disclosing personal information.

Cost/Compensation
There will be no financial cost to you to participate in this study. The study will take approximately less than 10 minutes of your time. You may be compensated for your time. Participants will be entered into a
drawing to win a $15 Amazon gift card, with up to three winners from each institution and a maximum of 24 winners in total. If you are selected, you will receive the gift card electronically by confidentially providing your email address at the end of the survey. By providing your email address, you can also elect to receive a brief report of findings and any practical application to your collegiate career by 06/01/17. In addition, each participating institution will receive a formal letter recognizing the athletic department’s participation in a service activity that assists the student-athlete empirical knowledge base.

**Confidentiality**
All information gathered in this study will be kept as confidential as possible. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for three years after completion of the study. After the storage time the information gathered will be destroyed.

**Voluntary Participation**
Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

**Participant Consent:**
I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age.

*Selecting the Yes checkbox at the beginning of the survey indicates your consent to participate.*
**Modification Request Form**

**Instructions:**
1. Complete all sections of this form.
2. Submit all previously submitted documents that contain information affected by the modification(s).

**Note:**
1. Handwritten and hand delivered forms will not be accepted.
2. INCOMPLETE FORMS WILL BE RETURNED.
3. Modification may not be implemented until you have received notification of IRB approval.
4. For your records, it is important that you keep a copy of this completed form.

### General Information

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<th>Principal Investigator Name: Alice Corkill, Ph.D.</th>
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### Description of Modification

**Type of Modification (check all that apply):**
- [x] Currently approved procedure
- [ ] Number of subjects
- [ ] Research Team**
- [ ] Title

**Modification Summary**

Briefly describe the modification.

*Currently approved procedure: I would like the option for surveys to be distributed as hard copies, in addition to the online Qualtrics link. The purpose of diversifying formats is to increase participation. The survey would be distributed to all junior, senior, and postgraduate student-athletes at the original three activities (e.g., meetings, life skills events, within the academic unit), with the Informed Consent document attached (participants consent by selecting the "yes" or "no" options on the first page of the survey). The student-athletes at these activities would return the surveys (whether they completed them or not) in the pre-paid envelope that would immediately be sent back to the Student*
Investigator. The individual in charge of the meeting would play the study introductory video before survey distribution. These are the only roles of the individuals in charge, whom which I know and can coach, as to be mindful that they are not engaged in the research. Informed Consent: I would like to make a change on the Informed Consent document and student-athlete email (attached). Specifically, remove the November 1, 2016 date under compensation, as data collection has extended beyond that date and gift cards have not yet been awarded. Within the Informed Consent document, I need to change Dr. Lough’s degree to Ed.D., and replace 12 minutes of time with 10 minutes of time, which is the actual time needed to complete the survey. I would also like to remove the November 1, 2016 date from the study flyer, and be clearer about the third compensation point (Community Service Recognition in place of Institutional Recognition; attached).

**Note: Addition of research team must include name(s) and role(s). Change in PI must be submitted and signed by the original PI on the protocol. Include the reason for the change in the modification summary.**

**Reanalysis of Risk (check one)**

- [x] This modification does not increase risk to participants enrolled in this study.
- [ ] This modification does increase risk to participants enrolled in this study.

**Signatures of Assurance**

**A. Investigator’s Assurance:**
I certify that the information provided in this application is complete and accurate. As Principal Investigator, I have ultimate responsibility for the conduct of this study, the ethical performance of the project, the protection of the rights and welfare of human subjects and strict adherence to any stipulations designated by the IRB. I agree to comply with all UNLV policies and procedures, as well as with all applicable Federal, State and local laws regarding the protection of human subjects in research including, but not limited to the following:

- Performing the project by qualified personnel according to the approved protocol.
- Not changing the approved protocol or consent form without prior IRB approval (except in an emergency, if necessary, to safeguard the well-being of human subjects).
- Obtaining proper informed consent from human subjects or their legally responsible representative, using only the currently approved, stamped consent form.
- Promptly reporting adverse events to the ORI – Human Subjects in writing according to IRB guidelines.
- Arranging for a co-investigator to assume direct responsibility, if the PI will be unavailable to direct this research personally, as when on sabbatical leave or vacation.

**FACULTY ADVISOR (IF APPLICABLE):** By my signature as Principal Investigator on this research application, I certify that the student/fellow investigator is knowledgeable about the regulations and policies governing research with human subjects and has sufficient training and experience to conduct this particular study in accordance with the approved protocol. In addition:

- I agree to act as the liaison between the IRB and the student/fellow investigator with all written and verbal communications.
- I agree to meet with the student/fellow investigator on a regular basis to monitor the progress of the study.
• I agree to be available and to personally supervise the student/fellow investigator in solving problems, as they arise.
• I assure that the student/fellow investigator will promptly report adverse events to the ORI – Human Subjects according to IRB guidelines.
• I will arrange for an alternate faculty advisor to assume responsibility if I become unavailable, as when on sabbatical leave or vacation.
• I assure that the student/fellow investigator will follow through with the storage and destruction of data as outlined in the protocol.

By submitting this form electronically, I agree to the assurance as stated above.
Hello (Name of Administrator),

I hope this finds you well. I am grateful for your willingness to assist me with data collection on your campus! All compensation items were approved, including following-up with your institution to share any practical application.

My goal is to make this as easy as possible for you. I'm happy to facilitate as much as I can from a distance. Below are the main recruiting materials and options for disseminating the survey to student-athletes:

   - The short YouTube video (also within the email and flyer) introducing myself, the study, and the survey link may be shared at beginning of the year meetings, life skills courses, and within your academic unit. The YouTube link may be shared as a separate item.

2. **Study Email (attached)**
   - The email may be sent directly to student-athletes from me if you have a database of juniors, seniors, and postgraduate emails you are willing to share.
   - The email may be forwarded to staff and student-athletes (following this email you will receive the email addressed to student-athletes that can be forwarded).
   - The attached email template may be copied/pasted and sent in a new email.

3. **Study Flyer (attached)**
   - The study flyer with tear off tabs may be used to promote the study at beginning of the year meetings, life skills courses, and within your academic unit. I will send color copies to your office using the address below to help alleviate printing on your end:

   (Address)

   Thank you again for your graciousness Andrea in assisting me with this important step in my dissertation study and what I believe to be valuable research for practitioners. Please feel free to contact me if you have questions and how I may provide assistance.

   All my best,
   Marissa

   [Study Introductory Video](http://www.bit.ly/studyintroductoryvideo) / [Study Link](https://www.youtube.com/watch?v=22L2bkE3sLA)

---

Marissa Nichols
Ph.D. Candidate, Department of Educational Psychology & Higher Education
Life Skills Program Consultant, Academic Success Center & UNLV Athletics
Teaching and Research Assistant, Department of Educational Psychology & Higher Education
Personal: (909) 730-5246
[https://www.youtube.com/watch?v=22L2bkE3sLA](https://www.youtube.com/watch?v=22L2bkE3sLA)
1. Coaches Email (attached)
   - The email may be sent directly to coaches, which can be forwarded to their junior, senior, and postgraduate student-athletes (I will send an email to you addressed to coaches that may be forwarded).
   - The attached email template may be copied/pasted and sent in a new email.

2. Student-Athlete Text Message (attached)
   - The following text message (equates to two texts) can be sent via GradesFirst or other software:

   Juniors, Seniors, Postgrads: Please fill out this survey www.bit.ly/student-athlete-study to enter a multi-winner $15 Amazon gift card drawing, receive success tips based on the study, & community service recognition. Participation time=less than 10 minutes. Thank you! –Marissa Nichols, former NCAA student-athlete

3. Student-Athlete Email (attached)
   - The email may be forwarded to staff and student-athletes (I will send an email to you addressed to student-athletes that may be forwarded).
   - The attached email template may be copied/pasted and sent in a new email.
   - The email may be sent directly to student-athletes from me if you have a database of juniors, seniors, and postgraduate emails you are willing to share.

4. Study Flyer (attached)
   - The study flyer with tear off tabs may be used to promote the study at meetings, life skills, and within your academic unit. I will send color copies to your office using the address below to help alleviate printing on your end:

   (Institution)
   (Address)

   - The short optional YouTube video (also within the emails and flyer) introducing myself, the study, and the survey link may be shared at meetings, life skills, and within your unit. The YouTube link may be shared as a separate item.
Coaches Email

Dear Coaches,

This semester, juniors, seniors, and postgraduate student-athletes were invited to participate in a student-athlete success dissertation survey from a former NCAA DI student-athlete and current Life Skills practitioner at UNLV. Thank you very much for encouraging participation in this 10-minute study by forwarding this email or texting the survey link to your student-athletes. Survey Link: http://www.bit.ly/student-athlete-study

Participants are entered into a multi-winner $15 Amazon gift card drawing (NCAA Compliance approved), receive college athlete success tips based on the study, and community service recognition. Each of the seven participating schools will receive follow-up consultation, as well.

Student-athletes can use a smartphone, tablet, or computer to take the survey and participation is anonymous. The study examines internal factors, such as mindset, among various types of academic and athletic performers. The intent is to benefit practitioners, including coaches and academic advisors, working with student-athletes to facilitate their growth and performance goals.

Thank you very much for your assistance in furthering our understanding of how to help Division I student-athletes be successful! If you have any questions about the survey, please do not hesitate to use the contact information below.

All my best,

Marissa Nichols

Study Introductory Video | Study Link

---

Ph.D. Candidate and Teaching Assistant | Educational Psychology & Higher Education
Life Skills Program Consultant | Academic Success Center / UNLV Athletics

Email: marissa.nichols@unlv.edu
Phone / Text: 909.730.5246
Juniors, Seniors, Postgrads: Please fill out this survey www.bit.ly/student-athlete-study to enter a multi-winner $15 Amazon gift card drawing, receive success tips based on the study, & community service recognition. Participation time is less than 10 minutes. Thank you! -Marissa Nichols, former NCAA student-athlete
**Student-Athlete Email**

Fellow Student-Athletes:

Juniors, seniors, and postgraduate student-athletes are invited to participate in a less than 10-minute student-athlete success survey: [http://www.bit.ly/student-athlete-study](http://www.bit.ly/student-athlete-study). The intent of this study is to develop a better understanding of how to facilitate your growth and performance goals.

**Compensation:** Participants are entered into a multi-winner $15 Amazon gift card, receive college athlete success tips based on the study, and community service recognition.

You can use a smartphone, tablet, or computer to take the survey and participation is anonymous.

Thank you for your assistance in furthering our understanding of how to help Division I student-athletes be successful! Please don’t hesitate to use the contact information below if you have any questions.

All my best,

Marissa Nichols, Former Student-Athlete

[Study Introductory Video](#) | [Study Link](#)

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Ph.D. Candidate and Teaching Assistant | Educational Psychology & Higher Education
Life Skills Program Consultant | Academic Success Center / UNLV Athletics
Email: marissa.nichols@unlv.edu
Phone / Text: 909.730.5246
STUDENT-ATHLETE RESEARCH STUDY OPPORTUNITY

The purpose of this research study is to understand student-athlete beliefs about academics and athletics, personal development, and college experiences.

WHO: Juniors, Seniors, Postgraduates
WHERE: Go to www.bit.ly/student-athlete-study to participate
SURVEY TIME: 10 minutes

COMPENSATION:
- Entry into a drawing to win a $15 Amazon gift card (up to three winners per school, up to 24 winners total; emailed by 11.01.16)
- Copy of study findings & any practical application to your collegiate athletic career (emailed by 06.01.17)
- Institutional Recognition for participation

CONTACTS:
Marissa Nichols
Phone/Text: 909.730.5246
marissa.nichols@unlv.edu

PI: Alice Corkill, Ph.D.
Phone: 702.895.4154
alice.corkill@unlv.edu

Co-Invest.: Nancy Lough, Ed.D.
Phone: 702.895.5392
nancy.lough@unlv.edu

STUDY INTRODUCTORY VIDEO: www.bit.ly/studyintroductoryvideo
You Tube Video

www.bit.ly/studyintroductoryvideo
Re: Student-Athlete Dissertation Study Follow-Up

(Name)
(Address)

(Name of Administrator),

Please accept my warmest thanks for being the catalyst to student-athlete participation at your institution for my dissertation study. I recognize you went above and beyond to help another practitioner, and you played a big role in this successful process! I look forward to giving back to you sometime throughout my career! Below is the status of the various follow-up procedures:

**Total Participants from (Institution): (#)**

$15 Amazon Gift Card Drawing: The Amazon Gift Cards were distributed using an online Research Randomizer (https://www.randomizer.org) generating random numbers to assign gift cards by the Subject ID. Six participants, one per institution, were selected and sent a $15 Amazon Gift Card electronically.

Community Service Credit: Please allot (#) hours of study participation (# participants / 20 minutes for time on task, rounded) towards the community service tally for any team or Pac-12 related competition. The community service credit can be categorized as a “research activity benefitting the student-athlete performance and development knowledge base.” While the actual survey time was 10 minutes, 20 minutes accounts for other survey related activities (e.g., watching the optional Study Introductory Video).

Study Follow-Up: I will follow up midyear to determine the best way to provide follow-up consultation, including how the results may be used while working with student-athletes. Student-athletes opting into receiving a brief report of findings will be sent a document with practical application electronically by June 1, 2017.

If you have any questions or need anything on my end, please do not hesitate to let me know. Thank you again. I am extremely grateful!

Respectfully and my best,

Marissa Nichols
Ph.D. Candidate | Teaching Assistant | Life Skills Program Consultant
Email: marissa.nichols@unlv.edu
Personal: 909.730.5246
APPENDIX C

Expert Panel: Athletic Performance Metric

Listed below are five athletic performance items derived from the literature. Up to three additional items can be included at the end of the survey for a maximum of eight items.

1) Please rank each athletic performance item in order of importance using 1, 2, 3, 4, 5, 6 (optional), 7 (optional), and 8 (optional). You can also recommend items to be omitted.

2) Please provide any item feedback on the item and/or answer choices.

1. I feel that I am performing up to my full athletic potential.
   a. Strongly agree
   b. Agree
   c. Somewhat agree
   d. Not sure
   e. Somewhat disagree
   f. Disagree
   g. Strongly disagree

   Item Rank: __________

   Item Feedback:

   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

2. Based on your roster spot or frequency of competition, how would you classify your current status in your main sport during the time when you competed (not on injury list, not academically ineligible, etc.)?
   *If you are not currently in season, use the last season of competition to answer the question.
   a. First team (for example, you start in a team sport or compete in your preferred events in individual sports)
   b. Second team (for example, regular substitute in a team sport, often compete in some event in individual sports)
   c. Third team (participate in practice but compete infrequently)
   d. Practice or training but not competing
   e. Other status: ________________________________________________

   Item Rank: __________

   Item Feedback:

   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

3. During the past five years, how often have you participated in any post-season competition?
   a. Never
   b. One time
   c. Two times
d. Three times  
e. Four times  
f. Five or more times

**Item Rank:**

**Item Feedback:**
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

**4a. Have you earned any individual athletic awards in college or at your current institution (All-American, All-Region, All-Conference, Team or School affiliated [i.e., Male/Female Athlete of the Year])?**

*If yes, the next page asks:

**4b. How many?**

**Item Rank:**

**Item Feedback:**
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

**5. Please indicate your current athletic scholarship award.**

a. Full athletic scholarship  
b. High partial athletics scholarship (51% and above)  
c. Moderate partial athletics scholarship (50% and below)  
d. Walk-on  
e. Not applicable  
f. Unsure

**Item Rank:**

**Item Feedback:**
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Please use the space(s) below to provide any additional athletic performance items and answer choices:

**6.**

**Item Rank:**
REFERENCES

Item 1: Rankin, Merson, Sorgen, McHale, Loya, & Oseguera, 2011
Item 2: Catina & Iso-Ahola, 2004; NCAA Growth, Opportunities, Aspirations, and Learning of Students in College (GOALS) Survey, 2015; Potuto & O’Hanlon, 2006; Rankin et al., 2011
Item 3: NCAA GOALS Survey, 2012
Item 4: Catina & Iso-Ahola, 2004; NCAA GOALS Survey, 2012; Potuto & O’Hanlon, 2006; Rankin et al., 2011

This is the end of the metric. Thank you for your valuable input!
## APPENDIX D

### Student-Athlete Inventory

M. Nichols NCAA Division I FBS Student-Athlete Internal Factors Study

**Introductory Video** (3:39) providing researcher background and all study details

**Informed Consent**

*I have read the Informed Consent document and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age.*

- Yes
- No

### Part I

*Directions: Please indicate your answer to the best of your ability by using the designated space underneath the question or by selecting one answer choice (unless otherwise specified). There are no right or wrong answers.*

### 1. Name of Institution:


### 2. Please select the main sport you play in college (select all that apply):

- [ ] Baseball
- [ ] Basketball (M)
- [ ] Basketball (W)
- [ ] Beach Volleyball
- [ ] Cross Country
- [ ] Field Hockey
- [ ] Football
- [ ] Golf (M)
- [ ] Golf (W)
- [ ] Gymnastics (M)
- [ ] Gymnastics (W)
- [ ] Lacrosse (W)
- [ ] Rowing (M)
- [ ] Rowing (W)
- [ ] Rugby
- [ ] Soccer (M)
- [ ] Soccer (W)
- [ ] Softball
- [ ] Swimming & Diving (M)
- [ ] Swimming & Diving (W)
- [ ] Tennis (M)
- [ ] Tennis (W)
- [ ] Track & Field (M)
- [ ] Track & Field (W)
- [ ] Volleyball (M)
- [ ] Volleyball (W)
- [ ] Water Polo (M)
- [ ] Water Polo (W)
- [ ] Wrestling
- [ ] Other Sport
3. What is your current academic standing?
   - Freshman/first-year
   - Sophomore
   - Junior
   - Senior
   - Postgraduate

4. What is your NCAA athletic eligibility year?
   - First year
   - Second year
   - Third year
   - Fourth year
   - Fifth/sixth year

5. What is your cumulative grade point average (GPA) in college? *If you are a transfer student-athlete at a new institution, please use the cumulative GPA from your previous institution.*

6. Have you earned any individual academic awards in college or at your current institution? (e.g., All-American, All-Region, All-Conference, team or school affiliated [i.e., Dean’s List])
   - Yes
   - No

6b. How many academic awards have you earned in college or at your current institution?

Block 2 of 6
7. Considering your entire collegiate athletic career, rate the percentage (1-100%) you feel you are performing to your full athletic potential.


8. How would you classify your current status in your main sport during the time when you competed (not on injury list, not academically ineligible, etc.)? *If you are not in season, use the last season of competition to answer the question.*

   - First team (for example, you start in a team sport or compete in your preferred events in individual sports)
   - Second team (for example, regular substitute in a team sport, often compete in some event in individual sports)
   - Third team (participate in practice but compete infrequently)
   - Practice or training but not competing
   - Other status


9. During the past five years, how often have you participated in any post-season competition?

   - Never
   - One time
   - Two times
   - Three times
   - Four times
   - Five or more times


10. Have you earned any individual athletic awards in college or at your current institution? (All-American, All-Region, All-Conference, team or school affiliated [i.e., Male/Female Athlete of the Year]?)

   - Yes
   - No


10b. How many athletic awards have you earned in college or at your current institution?
11. Please indicate your current athletic scholarship award (if any).

- Full athletic scholarship
- High partial athletics scholarship (51% and above)
- Moderate partial athletics scholarship (50% and below)
- Walk-on
- Not applicable
- Unsure

### Part II

**Directions:** Please indicate the extent to which you agree or disagree with each of the following 16 statements by selecting the rating next to each statement that corresponds to your opinion. There are no right or wrong answers.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. You have a certain amount of intelligence and you can’t really do much to change it.</td>
<td></td>
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<tr>
<td>2. Your intelligence is something about you that you can’t change very much.</td>
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<td>3. No matter who you are, you can significantly change your intelligence level.</td>
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<td>4. To be honest, you can’t really change how intelligent you are.</td>
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<td>5. You can always substantially change how intelligent you are.</td>
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<td>6. You can learn new things, but you can’t really change your basic intelligence.</td>
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<td>7. No matter how much intelligence you have, you can always change it quite a bit.</td>
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<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Somewhat Disagree</td>
<td>Neither Agree nor Disagree</td>
<td>Somewhat Agree</td>
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<td>Strongly Agree</td>
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<td>8. You can change even your basic intelligence level considerably.</td>
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<td>9. You have a certain amount of athletic ability, and you can’t really do much to change it.</td>
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<tr>
<td>10. Your athletic ability is something about you that you can’t change very much.</td>
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<tr>
<td>11. No matter who you are, you can significantly change your athletic ability. level.</td>
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<td>12. To be honest, you can’t really change your athletic ability.</td>
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<td>13. You can always substantially change your athletic ability.</td>
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<td>14. You can learn new things, but you can’t really change your basic athletic ability.</td>
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<td>15. No matter how much athletic ability you have, you can always change it quite a bit.</td>
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<td>16. You can change even your basic athletic ability level considerably.</td>
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</table>

**Part II Continued**

*Directions: Please indicate the extent to which you agree or disagree with each of the following 16 statements by selecting the rating next to each statement that corresponds to your opinion. There are no right or wrong answers.*

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</thead>
<tbody>
<tr>
<td>1. I set realistic goals for what I want to change about myself.</td>
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<td></td>
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<td>Somewhat Disagree</td>
<td>Neither Agree nor Disagree</td>
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<td>Strongly Agree</td>
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<td>2. I can tell when I am ready to make specific changes in myself.</td>
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<td>3. I know how to make a realistic plan in order to change myself.</td>
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<td>4. I take every opportunity to grow as it comes up.</td>
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<td>5. When I try to change myself, I make a realistic plan for my personal growth.</td>
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<td>6. I ask for help when I try to change myself.</td>
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<td>7. I actively work to improve myself.</td>
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<td>8. I figure out what I need to change about myself.</td>
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<td>9. I am constantly trying to grow as a person.</td>
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<td>10. I know how to set realistic goals to make changes in myself.</td>
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<td>11. I know when I need to make a specific change in myself.</td>
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<td>12. I use resources when I try to grow.</td>
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<td>13. I know steps I can take to make intentional changes in myself.</td>
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<td>14. I actively seek out help when I try to change myself.</td>
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<td>15. I look for opportunities to grow as a person.</td>
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<td>16. I know when it's time to change specific things about myself.</td>
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Block 5 of 6

*Part II Continued*
**Directions:** Based on your experiences in college, indicate how often you have done each of the following (1 = never or almost never; 2 = occasionally; 3 = often, or 4 = very often).

<table>
<thead>
<tr>
<th>1. Offered my opinion on a topic while visiting informally with a group of students.</th>
<th>2 - Occasionally</th>
<th>3 = Often</th>
<th>4 = Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Initiated the opportunity to make a formal oral class presentation.</td>
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<tr>
<td>3. Used a computer to conduct a literature search or to locate books/journals in the library.</td>
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<td>4. Went to the Student Union or other student gathering place to have a meal or a snack.</td>
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<tr>
<td>5. Attended an athletic department sponsored personal development event (e.g., financial management workshop).</td>
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<tr>
<td>6. Made a rough draft of a written paper in preparation for writing the final product.</td>
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<tr>
<td>7. Discussed policies and issues related to campus activities and student government with another student.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>1 - Never or Almost Never</th>
<th>2 - Occasionally</th>
<th>3 = Often</th>
<th>4 = Very Often</th>
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</thead>
<tbody>
<tr>
<td>8. Met my friends at the Student Union or other student gathering place to visit and socialize.</td>
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<tr>
<td>9. Used the library as a place to read current newspapers and magazines.</td>
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<tr>
<td>10. Carefully studied my textbooks and other required readings.</td>
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<tr>
<td>11. Gave a prepared verbal presentation in front of a group of students.</td>
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<tr>
<td>12. Had a serious discussion with a student on topics such as religion or politics.</td>
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<tr>
<td>13. Interacted with one of my instructors in an informal way, such as visiting in the hallway after class or over a cup of coffee.</td>
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<tr>
<td></td>
<td>1 - Never or Almost Never</td>
<td>2 - Occasionally</td>
<td>3 - Often</td>
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<tr>
<td>14.</td>
<td>Sought feedback from a friend or a professor relative to my written work.</td>
<td>[ ]</td>
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<tr>
<td>15.</td>
<td>Completed additional readings on topics introduced and discussed in class.</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>16.</td>
<td>Read a magazine or newspaper article that dealt with sports.</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>17.</td>
<td>Visited the career center, talked to a counselor about career opportunities and interests, and/or completed an inventory dealing with career interests.</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>18.</td>
<td>Used a dictionary or thesaurus to look up the proper meaning of a word.</td>
<td>[ ]</td>
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</tr>
<tr>
<td>19.</td>
<td>Made friends with students whose academic major and interests are different than mine.</td>
<td>[ ]</td>
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<tr>
<td>20.</td>
<td>Participated in campus social events with other students (e.g., dance, concert, political event).</td>
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**Block 6 of 6**

<table>
<thead>
<tr>
<th></th>
<th>1 - Never or Almost Never</th>
<th>2 - Occasionally</th>
<th>3 - Often</th>
<th>4 - Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>Used the library as a resource to find materials related to my classes or to write term papers.</td>
<td>[ ]</td>
<td>[ ]</td>
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</tr>
<tr>
<td>22.</td>
<td>Used the library as a place to look up and find interesting material unrelated to my classes.</td>
<td>[ ]</td>
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<tr>
<td>23.</td>
<td>Discussed a controversial subject with a student who embraced a philosophy of life or life-style different than mine.</td>
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<td></td>
<td>1 - Never or Almost Never</td>
<td>2 - Occasionally</td>
<td>3 - Often</td>
<td>4 - Very Often</td>
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<tr>
<td>24.</td>
<td>Took part in a discussion group in which the focus was upon personal improvement and enrichment.</td>
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<tr>
<td>25.</td>
<td>Took detailed notes in class and studied them outside of class.</td>
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<tr>
<td>26.</td>
<td>Talked with my instructor or another professor about career options and opportunities.</td>
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<td>27.</td>
<td>Socialized with students who were not athletes.</td>
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<tr>
<td>28.</td>
<td>Went to the Student Union or other student gathering place to look at the bulletin board for notices about campus events.</td>
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<tr>
<td>29.</td>
<td>Used the library's computer resources to help me find books and other journal articles that I used for my classes.</td>
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<td>30.</td>
<td>Helped plan a campus wide or campus small group social event.</td>
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<tr>
<td>31.</td>
<td>Used the Student Union or other non-library student gathering place as a place to relax and study.</td>
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<tr>
<td>32.</td>
<td>Completed an inventory dealing with career interests or some other inventory designed to measure career aptitude.</td>
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<tr>
<td>33.</td>
<td>Made an appointment to visit with one of my instructors during his/her office hours.</td>
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<tr>
<td>34.</td>
<td>Made friends with students whose race and/or cultural background is different than mine.</td>
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<tr>
<td>35.</td>
<td>Went to the Student Union or other student gathering place to play games (e.g., table tennis, pool, cards, pinball, video games) or to watch TV.</td>
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<tr>
<td>36.</td>
<td>Used the library as a place to study for my classes.</td>
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<tr>
<td>Question</td>
<td>1 - Never or Almost Never</td>
<td>2 - Occasionally</td>
<td>3 - Often</td>
<td>4 - Very Often</td>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>37. Gave a prepared verbal presentation in front of a group of people outside of the University (e.g., school, political gathering, social group).</td>
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<td>38. Talked to a close friend or coach about personal things.</td>
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<td>39. Participated in student government (e.g., voted, campaigned, ran for office).</td>
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</table>

What is your current declared major area of study?

- Business (Accounting, Marketing, Computer Information Sciences, etc.)
- Communications (Journalism, Public Relations, etc.)
- Education (Elementary, Secondary, Special, etc.)
- Engineering
- Health Sciences (Exercise, Sports, Kinesiology, etc.)
- Honors College
- Hotel Administration (Hospitality Management, Hotel Administration, etc.)
- Humanities and Fine Arts (Music, Religion, English, etc.)
- Liberal Arts (Interdisciplinary Degree Programs, Psychology, English, Philosophy, Anthropology, etc.)
- Physical Sciences and Mathematics (Chemistry, etc.)
- Professional Studies (Nursing, Occupational Therapy, etc.)
- Social Sciences (History, Sociology, Political Science, etc.)
- Zoological Sciences (Zoology, Physiology, etc.)
- Other Academic Field: [ ]
- Undecided

How do you describe yourself?

- African American or Black
- Asian or Pacific Islander
- Hispanic or Latino American
- Native American or American Indian
White, non-Hispanic (includes Middle Eastern)

☐ Multiracial

☐ Not listed

☐ Prefer not to respond

Study Compensation Part I

Amazon Gift Card Drawing
Please submit an email address below if you would like to be entered into the drawing to win a $15 Amazon gift card for participating in this study. Up to three winners from your school will be selected and emailed an electronic gift card. Your email address will remain confidential.

Study Compensation Part II

Study Results
Please submit an email address below if you would like to receive a brief report of findings electronically by June 1, 2017. The findings will be written in a practical way so that you can actually implement them during your collegiate career. Your email address will remain confidential.
REFERENCES


26(2), 119-124.


Weiner, B. (1986). *An attritional theory of achievement motivation and emotion* (pp. 159-190). Springer US.


CURRICULUM VITAE

Marissa K. Nichols 909.730.5246 • nicholsm@bu.edu • https://www.youtube.com/user/MNichols232

EDUCATION

**Ph.D. Higher Education** University of Nevada, Las Vegas May 2017
*Dissertation: An Examination of Differences in Division I FBS Student-Athlete Academic and Athletic Performance;* Drs. Nancy Lough (co-chair), Alice Corkill (co-chair), Vicki Rosser, Jennifer Pharr

**M.Ed. Counselor Education – School Counseling** University of Nevada, Las Vegas May 2010

**B.S. Human Services Counseling** University of Nevada, Las Vegas May 2008
*Marriage & Family Studies Minor*

STUDENT-ATHLETE DEVELOPMENT EXPERIENCE

**Life Skills Program Consultant – Student-Athlete Academic Services (SAAS)**
University of Nevada, Las Vegas (UNLV) August 2015 – May 2017
*Provided consultation from a 30,000-foot view to Student-Athlete Development (SA Development) team – including guiding programming, implementing assessment, contributing curriculum, and facilitating at the Reaching Excellence Beyond Sports (R.E.B.S.) Life Skills Seminars.*

- Served as a voice for program direction, seminar content, and execution
- Developed and implemented pre- and post-seminar evaluations
- Analyzed program data and reported outcomes to university and athletics administrators
- Contributed content in regular curriculum development meetings
- Co-facilitated at seminars and provided constructive feedback post-event
- Created comprehensive checklists on program operations and engagement strategies
- Provided professional development training to Life Skills team
- Synthesized SA Development job titles and descriptions for creation of full-time position
- Arranged and executed face-to-face meetings with senior athletics administrators within Pac-12, Mountain West, and West Coast Conferences to collaborate on SA Development programming

**Supervisor: Rebecca Pugh, Associate Athletics Director**

**Life Skills Program Coordinator – Graduate Assistant, Student-Athlete Academic Services**
University of Nevada, Las Vegas August 2011 – August 2015
*Facilitated all aspects of the Life Skills Program for 450 student-athletes, including program identity, developing original curriculum, teaching and leading seminars, pioneering the inaugural R.E.B.S. Life Skills Seminar and Student-Athlete Football Summer Orientation.*

**Major Contributions**
- Developed the R.E.B.S. Life Skills program encompassing 40+ events for 450 diverse student-athletes including program structure, learning outcomes, content areas, and departmental presence
- Pioneered the three-year standing R.E.B.S. Life Skills Seminar from concept to delivery
- Instituted the four-day Football Summer Orientation for 105 student-athletes as part of the Academic Progress Rate (APR) Recovery / Improvement Plan

**Assessment**
- Constructed and analyzed department-wide needs assessments
- Developed and implemented pre- and post-seminar evaluations
- Reported outcomes within Athletics Department and Academic Success Center annual reports

**Curriculum /Teaching and Facilitation Skills**
- Created original curriculum spanning managing time, leadership, self-awareness, performance, leaving a legacy, communication, etiquette, finances, higher education success, and career skills
Presented and facilitated activities for all student-athletes including revenue generating sports
Used timelines to manage multifaceted seminars encompassing content, activities, and guests

Financial Support
- Assisted in launching an avenue for SA Development gift donation via the Rebel Athletic Fund
- Secured $4,000 in grant funding for programming purposes
- Managed a $10,000 contribution towards SA Development and budgeted program expenditures

Departmental and Community Relations
- Collaborated and partnered with campus, the Las Vegas community, and Southern Nevada employers for career events spanning awareness / transition, professional development skills, and networking opportunities
- Member of the UNLV Student-Athlete Well-Being Task Force; served as liaison for committee communication within Inside Rebel Athletics weekly newsletter
- Initiated individual meetings with coaches and the Student-Athlete Advisory Committee (SAAC) to assess team needs and develop future programming
- Presented program information and updates at all-staff, head coach, and senior staff meetings

Leadership Development
- Devised and taught program-specific Leadership Development curriculum
- Conducted weekly office hours for seminar follow-up and individual student-athlete training
- Initiated onboarding and provided leadership for new graduate assistants helping with seminars
- Served as a mentor to returning student-athletes within the Student-Athlete Mentor Program
- Coordinated annual student-athlete recognition on National Student-Athlete Day

Supporting Materials
- Co-created WebCampus (Blackboard) section with pre-registration, content, and communications
- Designed “Starter Kit” for each seminar filled with content, worksheets, and resources
- Created and organized all program communications both in-person and electronically including flyers, handouts, electronic and hard copy marketing materials

Supervisors: Rebecca Pugh, Associate Athletics Director (2013 – present); Lisa Kelleher, Ph.D., Deputy Director of Athletics / SWA (2011 – 2013)

COUNSELING PRACTITIONER AND STUDENT-ATHLETE ADVISING EXPERIENCE

Performance and Personal Development Consulting
Private Consulting, Pacific Southwest, and Desert Regions August 2016 – Present
Privately recruited based on previous work to provide team-based consulting services for middle school, high school, and college student-athletes.
- Assess team academic, athletic, and developmental needs through pre- and post-evaluations
- Design personal development and performance team protocols based on coach and client input
- Create and lead mental skills development classroom sessions in the areas of academic and athletic mindset, with as many as four sessions / day
- Facilitate sensitive discussions and lead group reflection processes
- Consult with coaching staff to teach supporting concepts and team follow-up

TRIAD Consulting, Las Vegas, NV December 2015 – Present
Provide individualized services to high school students and athletes in the areas of academic success, athletic success, and personal wellness.
- Assess client academic, athletic, and developmental needs through pre- and post-evaluations
- Design individualized protocols based on student-athlete academic, athletic, and personal development needs
• Create and deliver curriculum in one-on-one settings on self-identity, positive sense of self, personal values, motivation, character, effective communication, family patterns, and academic and sport performance
• Provide regular progress reports and collaborate with parents to implement session techniques
• Upheld various administrative tasks including organizing individual coaching calls
  Supervisor: Mark Guadagnoli, Ph.D., CEO & Founder TRIAD Consulting

Athletic Academic Advisor – Graduate Assistant, Student-Athlete Academic Services
University of Nevada, Las Vegas August 2011 – August 2014
Provided academic advisement and support services for the Men’s and Women’s Golf, Cheer and Dance programs over the course of three years.
• Managed the National Collegiate Athletic Association (NCAA) certification process including satisfactory progress towards degree and compliance with all NCAA, MWC, institutional bylaws
• Maintained a caseload of 75+ student-athletes
• Provided relevant NCAA rules interpretations to coaches and athletics administrators
• Implemented monitoring systems for at-risk student-athletes including weekly meetings and objective based learning
• Engaged in strengths-based major exploration with student-athletes using career evaluation tools
• Provided education, content, and learning support in the areas of optimal academic performance, study skills and test taking strategies, motivation, personal strengths, mental skills training, self-confidence, communication, and goal attainment
• Led meetings with prospective student-athletes, parents, and staff during recruiting visits
• Evaluated transcripts and provided interpretation for prospective student-athletes, junior college, and four-year transfers
• Coordinated and monitored tutoring appointments on a weekly basis
• Provided travel documentation for students competing away from home
• Liaison to campus resources for academic support, mental health and wellness
• Chaired Learning Specialist partnership between SAAS and UNLV College of Education
• Co-assisted with implementing Men’s and Women’s Golf APR data
• Evaluated summer school needs based on eligibility and budget; provided consultation to coaching staffs
  Supervisors: David Jackson, Immediate Past Director; Rebecca Pugh, Associate Athletics Director

School Guidance Counselor
Nevada Virtual Academy, Las Vegas, NV August 2010 – August 2011
Served as the school guidance counselor for grades K – 9.
• Managed enrollment and course registration for a caseload of over 1,000 students
• Created individualized four-year academic plans aligning with school and state graduation requirements
• Implemented student initiatives promoting a positive school climate and academic excellence
• Provided individual and group counseling services to a large and diverse population
• Advocated for students’ future career endeavors and post-secondary education access
• Provided support and service to parents with concerns
• Created and lead the inaugural Collegiate Athlete Group for prospective NCAA student-athletes
• Assisted prospective student-athletes with core course registration and knowledge of initial-eligibility standards
  Supervisor: J. Sean Jensen, Principal
School Guidance Counselor Intern
Charlotte Hill Elementary, Henderson, NV August 2010 – December 2010
Louis Weiner Elementary, Henderson, NV
Orchestrated psychoeducational groups in addition to providing supervised individual and group counseling services.
• Taught classroom guidance sessions in the areas of grief, divorce, character, and transition
• Facilitated individual and group guidance counseling sessions
• Executed administrative duties pertaining to the school guidance counselor role

Mental Health Counselor Intern
Seven Hills Behavioral Institute, Las Vegas, NV January 2009 – May 2009
Offered individualized treatment and group therapy to young adults within an inpatient setting.
• Provided mental health, addiction detoxification, and rehabilitative services to adults ages 18+
• Co-facilitated group sessions focusing on addiction with a special focus of substance abuse
• Co-facilitated patient intake sessions, managed and updated patient records

Field Intern
University of Nevada, Las Vegas August 2007 – May 2008
Engaged in addiction awareness and prevention efforts with at-risk and disadvantaged groups.
• Executive Board Member for the Student Organization of Addiction Professionals dedicated to addiction treatment and prevention
• Served as the chief web administrator for organization
• Editor and staff member of the 10,000 Kids Partnership non-profit organization
• Participated in planning the annual State of Nevada Association of Addiction Professionals Conference and National Recovery Month citywide picnic

TEACHING EXPERIENCE
Teaching Assistant – Department of Educational Psychology & Higher Education
University of Nevada, Las Vegas January 2017 – Present
Facilitator in the transition of EDH 606: Intercollegiate Athletic Administration to an online format.
• Design weekly plan of transitioning in-person content to online content
• Work with Office of Information Technology design and programming teams to coordinate transition
• Copy all course content to EDH 606 Development shell and organize into learning modules

University of Nevada, Las Vegas August – December 2016
Co-taught EDH 606: Intercollegiate Athletic Administration and serve as a teaching assistant for EPY 710: Survey Research Methods.
• Prepared content for 16 graduate students, including creating and designing weekly PowerPoint
• Co-lectured and facilitated discussions
• Developed, organized, and co-lead group activities
• Interacted with students outside of class through appointment or via web communications
• Identified peer reviewed journals as supplemental reading material
• Created and designed three-part Qualtrics presentation recorded through Camtasia software
• Prepared materials for group activities
• Executed various administrative tasks for class
• Selected peer reviewed material with specific statistical analyses to supplement weekly content
Supervisors: Nancy Lough, Ed.D.; Alice Corkill, Ph.D.
## Seminar Leader, Facilitator, Teaching, and Public Speaking Experience: A Summary

<table>
<thead>
<tr>
<th>Platform</th>
<th>Topics / Content</th>
<th>Term</th>
<th>Enrollment</th>
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<tbody>
<tr>
<td>Intercollegiate Athletics</td>
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<tr>
<td><strong>R.E.B.S. Life Skills</strong></td>
<td>Maximizing Time, Stress Management, Effective Communication</td>
<td><strong>Fall 2016</strong></td>
<td>Between 25 – 60 student-athletes per seminar</td>
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<tr>
<td>Seminar Co-Facilitator</td>
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<tr>
<td><strong>R.E.B.S. Life Skills</strong></td>
<td>Productivity and Mastering Time, Leadership and Legacy, Etiquette 101, Speaking</td>
<td><strong>Fall 2014</strong></td>
<td>Between 25 – 150 student-athletes per seminar</td>
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<tr>
<td>Seminar Leader</td>
<td>with Confidence, Career Skills Workshop</td>
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<tr>
<td>Football Summer</td>
<td>Time Management, Communication and Professionalism, Study Skills and Test Taking</td>
<td><strong>Summer 2014</strong></td>
<td>105 student-athletes</td>
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<tr>
<td>Orientation Leader</td>
<td>Strategies, Financial Literacy, Defining a Legacy</td>
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<tr>
<td>Individual Team</td>
<td>Self-Images, Mindset, Leadership, Overcoming Adversity / Resiliency</td>
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<tr>
<td>Workshops</td>
<td></td>
<td><strong>Spring 2017, Fall 2014, Fall 2013, Fall 2012, Fall 2011</strong></td>
<td>Up to 25 student-athletes per session</td>
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<tr>
<td>Higher Education</td>
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<tr>
<td><strong>EDH 606: Intercollegiate</strong></td>
<td>Historical Perspectives of ICA, ICA Athletics Governance and Structure, Conference</td>
<td><strong>Fall 2016</strong></td>
<td>16 graduate students</td>
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<tr>
<td>Athletic Administration (ICA)</td>
<td>Realignment, Presidential Control, Leadership and Management, Media Relations,</td>
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<td>Corporate Sponsorship / Marketing, Financial Operations, Facility and Event</td>
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<td>Management, Alumni Relations and Athletic Development, Content Analysis, Student-</td>
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<td>Athlete Performance, Student-Athlete Support Services: Academics, Eligibility, Life</td>
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<td>Skills</td>
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<td><strong>Toastmasters Organization</strong></td>
<td>Effective Public Speaking, Public Speaking and Performance, Personal Experience</td>
<td><strong>August 2014 – present</strong></td>
<td>20 undergraduate / graduate students, staff, working professionals</td>
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<td>Speeches, Commencement Address</td>
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<tr>
<td><strong>EDH 780: Teaching in</strong></td>
<td>Teach Your Passion: Living Your Best Life</td>
<td><strong>Spring 2013</strong></td>
<td>10 graduate students</td>
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<td>Higher Education</td>
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<tr>
<td>Teaching Portfolio: R.E.B.S. Life Skills Seminar</td>
<td>Rebel in the Making: Capitalizing on the Higher Education Experience</td>
<td>Fall 2012</td>
<td>Speech for 5,000 undergraduates, faculty, administrators, and staff</td>
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<td>Inaugural UNLV Creates Event</td>
<td>Guest Lecturer</td>
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<tr>
<td>Graduate &amp; Professional Student Association</td>
<td>Polishing Your Presentation Skills</td>
<td>Spring 2017</td>
<td>25 graduate students</td>
</tr>
<tr>
<td>Inaugural Las Vegas Showcase Winter Camp</td>
<td>Mental Skills Training Classroom Sessions: Academic and Athletic Mindset</td>
<td>Fall 2016</td>
<td>50 high school student-athletes and collegiate coaches (10 – 12 / session)</td>
</tr>
<tr>
<td>COLA 100E: First Year Seminar</td>
<td>Prepare to Compete: Success in Higher Education</td>
<td>Fall 2012, Fall 2013</td>
<td>35 undergraduates</td>
</tr>
<tr>
<td>Common Reader Program Facilitator</td>
<td>The Last Lecture (Pausch, 2008)</td>
<td>Fall 2013</td>
<td>20 administrators and faculty</td>
</tr>
<tr>
<td>Hixon-Lied Success Scholar Workshop</td>
<td>Professionalism for Students</td>
<td>Fall 2012</td>
<td>25 undergraduates</td>
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</table>

**ACADEMIC AND CONFERENCE PRESENTATIONS**


**GRANT WRITING EXPERIENCE AND ACADEMIC FUNDING**

**Student Applicant – Graduate & Professional Student Association**

University of Nevada, Las Vegas

December 2016

*Secured funding for the Spring 2017 term to present research at the 2017 American Educational Research Association Annual Meeting.*
• Prepared formal proposal including explanation of activities, research summary, and brief statement
• Created itemized budget with justification section and supplemental materials
  Funded December 2016: $800.00

**Student Investigator – Student-Athlete Academic Services**
University of Nevada, Las Vegas  
January 2012 – August 2012
Served as the Student Investigator and assisted with writing portions of the Foundation for Alcohol Research: Great Plays Alcohol Abuse Prevention Study.
  • Worked alongside senior athletics administrators to coordinate various components of grant
  • Devised and allocated salaries, positions, and resources for grant money allocation
  • Chaired the revisions and submission process
  Funded August 2012: $10,000

**Grant Coordinator – Student-Athlete Academic Services**
University of Nevada, Las Vegas  
August 2011 – December 2011
Served as the Grant Coordinator with responsibilities of writing each component of the Target Campus Grant.
  • Initiated athletics department involvement in securing grant funding
  • Executed research on strategies for successful grant submissions
  • Developed, edited, and chaired the submission process
  Funded December 2011: $4,000

**Grant Coordinator – Family Research and Services (FRS)**
University of Nevada, Las Vegas  
May 2010 – August 2010
Served as the Grant Coordinator; assisted with writing portions of the National Institute on Drug Abuse: Family Behavior Therapy for Collegiate Athletes Grant (Principal Investigator: Brad Donohue, Ph.D.).
  • Developed review of the relevant literature and implementation strategies portions of the grant
  • Organized meetings with grant staff and coordinated various research roles
  • Educated staff members on the collegiate athlete experience both empirically and anecdotally
  Funded August 2012: $1,988,000; NIDA; 1 R01 DA031828

### SUPERVISION EXPERIENCE

**Co-Supervisor – Student-Athlete Academic Services**
University of Nevada, Las Vegas  
August 2014 – August 2015
Served as the co-supervisor to fellow graduate assistant helping with the R.E.B.S. Life Skills Program.
  • Trained and equipped student with knowledge on the Student-Athlete Development field
  • Collaborated with student to assign weekly goals and tasks in preparation for the R.E.B.S. Life Skills Seminar
  • Empowered and trained student to take co-lead at events including the Career Skills Workshop
  • Provided professional development and coaching through regular meetings

**Supervisor – Hospitality Management Program**
University of Nevada, Las Vegas  
January 2013 – August 2013
Served as the supervisor to Hospitality Management student-athlete seeking experience in running athletics-related events.
  • Responsible for oversight and management of student’s work experience hours for semester
  • Collaborated with student to identify and assign tasks in preparation for student-athlete events
  • Administered bi-weekly meetings to provide professional development and constructive feedback

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• Conducted formal evaluations substantiating progress, hours earned, and description of duties

INTERCOLLEGIATE ATHLETICS PARTICIPATION AND INSTRUCTION

Athletic Scholarship – Softball
University of Nevada, Las Vegas August 2004 – May 2010
• Team Captain and SAAC Member

USA Softball Elite Team
Surrey, British Columbia Summer 2005
Madrid, Spain

Private Softball Instructor
The Dugout Batting Cages, Las Vegas, NV May 2010 – February 2014
• Provided individualized instruction and technical skills to K12 student-athletes
• Maintained and organized a weekly caseload of nine athletes between the ages of seven and 16
• Paired offensive and defensive skills with mental skills training and sport psychology concepts
• Motivated through weekly goal setting and accountability checkpoints
• Coached parents on positive responses to performance and working with athlete’s personality

Private Team Clinics
Las Vegas, NV May 2010 – February 2014
• Engaged in initial consultation with coach, assessed team needs, developed clinic plan and goals
• Taught softball content knowledge, practical skill situations, and individual and team drills
• Facilitated reflection and evaluation with coaching staff and players
• Managed four teams of 15 athletes during two-hour team clinics scheduled monthly on an as needed basis

SERVICE TO THE UNIVERSITY

UNLV Commencement Ceremony
Student Speaker May 2017

UNLV Toastmasters – Club 976032
President July 2016 – Present
Vice President of Membership January 2016 – June 2016

Intercollegiate Athletics Council
Graduate & Professional Student Association (GPSA) Representative Fall 2015 – Present

National Association for Academic Advising for Athletics – N4A
Awards Committee Appointment April 2017
Research Committee Member May 2016 – Present

University Search Committees – National Searches
Athletic Academic Advisor Spring 2016
Faculty in Residence First-Year Seminar Spring 2013

Rebels R.I.S.E. Sophomore Recognition Ceremony
Panelist Fall 2012
HONORS AND AWARDS

Professional
- 2017 UNLV Student Commencement Speaker
- 2017 GPSA Research Forum: Education Platform Session A – 2nd place
- 2017 Area Division 3 “Sparkplug of the Year” award recipient
- 2017 Annual UNLV Toastmasters “Sparkplug of the Year” award recipient
- 2016 GPSA Research Forum: Education Platform Session A – 1st place
- 2016 Annual UNLV Toastmasters Evaluation Contest winner, advancement to Area D3 Contest
- 2016 Customer Service Excellence Award Nominee

Athletic
- 2010 NCAA Woman of the Year Finalist
- 2010 NCAA Mountain West Conference Woman of the Year representative
- 2010 Outstanding Graduate Award, Dr. Neal Smatresk, President
- 2010 Lowe’s Senior CLASS Award Finalist
- 2010 Las Vegas “Player of the Decade” Finalist
- 2010, 2009, 2005 Mountain West All-Conference Team
- 2008 Rebel Pride Award
- 2005 USA Elite All-Tournament Team
- 2005 NFCA 1st Team All-American
- 2005 UNLV Female Athlete of the Year
- 2005 “Best of Las Vegas” by the Las Vegas Review Journal
- 2005 1st Team All-Region
- 2005 Mountain West Conference Freshman of the Year
- 2005 Mountain West Conference All-Tournament Team

Academic
- ESPN The Magazine Academic All-District Squad, 2010 First Team, 2009 Second Team
- The National Scholars Honor Society for Magna Cum Laude Honors, Invitation, Spring 2008
- NCAA Academic All-American, Fall 2007
- Dean’s Honor List, Fall 2007, Spring 2007
- Academic Mountain West Conference Award Recipient, Fall 2004 – Fall 2010

PROFESSIONAL AFFILIATIONS

Present
American Educational Research Association – Research Focus on Education and Sport Special Interest Group (SIG)
National Association for Academic Advising for Athletics (N4A)
Toastmasters International
Women Leaders in College Sports

Past
Association for the Study of Higher Education (ASHE)
American School Counseling Association
Chi Sigma Iota Counseling Academic and Professional Honor Society International
Chi Sigma Iota Omega Alpha Chapter – UNLV
Student Organization of Addiction Professionals – UNLV