A STUDY OF STUDENT ATHLETES' MOTIVATION TOWARD SPORTS AND ACADEMICS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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ABSTRACT

The purpose of this study was to develop a scale to measure student athletes' motivation toward sports and academics. Three major research questions guided this study: 1) Does the scale developed to measure academic and athletic motivation have an underlying structure that makes sense and is the scale reliable?; 2) Are there differences in motivation and ACT scores as a function of gender and profile of sport?; and 3) How influential is motivation in predicting academic performance above and beyond academic aptitude?

Participants in this study consisted of 236 student athletes at a large university in the mid-west. The sample was stratified across gender and profile of sport. There were two high profile sports for men (basketball and football), two high profile sports for women (softball and basketball), two low profile sports for men (lacrosse and volleyball), and two low profile sports for women (lacrosse and field hockey).
Data were collected during team meetings for each sport using an instrument developed specifically for this study called the Student Athlete Motivation toward Sports and Academics Questionnaire (SAMSAQ). The SAMSAQ consisted of a total of 30 items designed to measure academic and athletic motivation. The questionnaire was designed using a six-point Likert-scale. Participants were asked to respond to each item based on their level of agreement with each statement. The scale ranged from very strongly disagree to very strongly agree. There were also six demographic questions at the end of the questionnaire.

Exploratory factor analysis was used to determine the underlying structure of the scale. According to the results, the scale yielded a three-factor solution with an acceptable RMSEA value of .067. The three factors were named according to common characteristics shared by the items that loaded on each sub-scale. The factors were named: 1) career athletic motivation sub-scale (CAM), 2) student athletic motivation sub-scale (SAM), and 3) academic motivation sub-scale (AM).

Analysis of variance was used to examine differences on each of the motivation sub-scales and ACT score as a function of gender and profile of sport. The results
indicated an interaction effect of profile and gender on ACT score. There was also a main effect of gender on all three sub-scales, and a main effect of profile of sport on the career athletic motivation sub-scale. Low profile male athletes had the highest ACT scores, followed by low profile females, high profile females, and high profile males, respectively. Females had higher academic motivation than males, while males had higher career athletic motivation and student athletic motivation than to females. High profile athletes also had higher career athletic motivation than low profile athletes. There were no interaction effects present in the results.

Hierarchical multiple regression analysis was used to assess the extent to which motivation predicted future academic performance above and beyond academic aptitude. SAT score was entered in the first block, followed by the motivational sub-scales in the second block. The results indicated that SAT score and academic motivation score were significant predictors of academic performance in the model. Career athletic motivation and student athletic motivation had a negative, but insignificant, influence on academic performance. The overall model explained 25% of the variance in academic performance.
The results of this study have implications for counselors, athletic administrators, and educators working with and conducting research concerning student athletes. Assessing academic and athletic motivation early on can prevent overemphasis in one domain over the other. Further, preventative programs and services should be designed to help motivationally at-risk student athletes develop a balance between academic and athletic tasks.
Dedicated to my mother & brother

"You are the wind beneath my wings!"

Unknown
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CHAPTER 1

INTRODUCTION

There is now a revolving door through which many athletes enter a university illiterate, and through which, after exhausting their eligibility, they leave again, still illiterate and unable to get a decent job. Steps have been taken to address the problem, but it still represents the deepest form of exploitation (Farrell, 1989; pg. 5).

This statement, written over a decade ago, still rings true on some college campuses across the country. Specifically, this statement is reflective of the plight of many student athletes who participate in Division I athletics, especially those who participate in sports that are widely known for their association with professional sports in the United States (Lapchick, 1988; Parmer, 1994).

However, the last part of this quote gives us hope that the future will hold better opportunities for academic, in addition to athletic, success for those
student athletes who may be currently exploited by this system. For this to manifest, educators must continue assessing the environment created by big time intercollegiate athletic programs for ways to improve outcomes for student athletes who matriculate through it.

Academic achievement levels of student athletes at Division I universities continue to be a major area of concern for athletic and university administrators (Cullen, Latessa, & Byrne, 1990; Edwards, 1984). The National Collegiate Athletic Association (NCAA) publishes annually the graduation rates of student athletes at Division I universities, analyzed by race, gender, and sport. In particular, student athletes who participate in revenue producing sports, such as football and men’s basketball, receive much of the attention in this line of research.

One of the latest reports (“Division I Athletes,” 1999) indicated that overall, student athletes graduated at higher rates than students in the general population. However, the graduation rates of student athletes who participated in men’s basketball and football were well below the national average. Moreover, student athletes who participate in revenue producing sports often perform
exceptionally well on the field but their performance in the classroom often falls below average ("Division I Athletes," 1999). This dilemma is of considerable importance as the role of intercollegiate athletics in higher education continues to be questioned.

There have been a few studies concerned with student athletes’ motivation to achieve academically and athletically (Parmer, 1994; Pascarella & Smart 1991; Sailes, 1996; Snyder, 1996; Young & Sowa, 1992). There is evidence to support both sides of the argument about the effects of participation in intercollegiate athletics on academic achievement.

A widely held assumption is that athletic departments at Division I universities serve as training camps for professional sports such as football, men’s basketball, and baseball. As a result, some student athletes who participate in revenue producing sports may be motivated by the "athletic dream." Parmer (1994) defines the athletic dream as

A multidimensional set of behaviors and fantasies propelled by the desire to pursue super-stardom and upward mobility through sport participation: the
ultimate result is a potential professional athletic career where 'the dream' can be lived out (p. 333). Motivation toward the athletic dream often requires a level of commitment that makes it difficult for student athletes to balance academic and athletic pursuits.

On the other hand, research also suggests that participation in intercollegiate athletics can enhance degree attainment, as well as contribute to an athlete’s physical and social development (Pascarella & Smart, 1991). However, this is mainly the case for student athletes who are not affected or motivated by the athletic dream.

The fact that certain groups of student athletes do not achieve academic success, especially student athletes who participate in football and men’s basketball, warrants investigation of the attitudes and beliefs associated with motivation to perform successfully in academic and athletic tasks. Aside from the assumption that some student athletes stop-out of college because they are under-prepared for college level work, other explanations have not been thoroughly explored to account for low grade point averages and graduation rates of athletes, especially for men’s basketball and football.
Conceptual Framework

All student athletes do not share the same motivation or reasons for attending college and participating in their sport. Instead, college athletes vary in the amount of motivation exhibited toward sports and academics. Inevitably, some student athletes attend college for the sole purpose of making it to the professional level in their sport. Often this type of student athlete neglects his/her academic responsibilities, placing all effort and time into pursuing the athletic dream. Student athletes with the sole goal of playing professional sports are mainly concerned with doing enough in the classroom to maintain eligibility to compete. Student athletes characterized as such are less concerned with making actual progress toward completion of a college degree.

There are also students who are motivated to play their sport and equally motivated to obtain a college degree. This type of student athlete desires to do well both in the classroom and on the field. Student athletes who exhibit more of a balance between academics and athletics have dual goals of completing a college degree and achieving a high level of performance in their sport.
On the other end of the continuum, are student athletes who are most concerned with completing a college degree. This type of student athlete may use their sport as a means to complete a college degree, and is less concerned with being a super-star on the team. An example would be a football player with a 3.8 grade point average who is perfectly content with sitting on the bench for the majority of the season. This type of student athlete is clearly more motivated to earn a college degree and is likely using athletic grant-in-aid to finance his/her education.

These three types of attitudes exhibited by student athletes exist at varying degrees on most Division I campuses across the country; however, there is no current way of measuring student athletes' motivation toward sports and academics. Academic and athletic motivation is characterized by the amount of energy student athletes put forth toward academic and athletic tasks, and are not the same for every student athlete. We cannot assume that every student athlete on the men's basketball team has the desire to play at the professional level. On the other hand, we cannot assume that no one on the women's soccer team has the desire to play on the Olympic team.
The field of motivation, when applied to college athletes, has the potential to help us understand why some student athletes do or do not perform poorly in academic and/or athletic tasks. This study will use theories of achievement motivation to examine the attitudes and behavior of student athletes' towards performing academic and athletic tasks. A basic assumption of achievement motivation theory is that motivation toward a given task can be determined by an individual's choice of, persistence on, and the amount of effort applied to the task (Silva & Weinberg, 1984; Weiner, 1984).

Expectancy value theory is an achievement motivation theory focusing on an individual's perception about a given task based on the value associated with completion of that task (Rotter, 1954). For example, student athletes who participate in revenue producing sports may work hard at making it to the professional level because they value the extrinsic rewards (e.g., financial, social status, etc.) associated with playing at an elite level in sports such as football and basketball.

However, what happens if a student athlete realizes that he/she will not make it to an elite level of professional or Olympic competition? Attribution theory is
also an achievement motivation theory, which postulates that individuals have certain beliefs about the causes of their successes and failures (Weiner, 1984).

Based on these beliefs, individuals make a choice whether to approach success or avoid failure. Individuals who choose to approach success tend to attribute success to ability and effort, and attribute failure to a lack of hard work and effort. Those who choose to avoid failure tend to attribute success to luck or chance, and attribute failure to lack of ability.

For example, according to this theory, if a student athlete who did not make it to the professional level was motivated to avoid failure, he/she would attribute his/her failure to lack of ability. However, if the student athlete was motivated to approach success, he/she would likely attribute failure to not working hard enough or not putting forth enough effort.

If the student athlete happened to make it to the professional level, but was motivated to avoid failure, he/she would likely attribute this success to luck or chance. But if the student athlete was motivated to approach success and made it to the professional level, he/she would likely attribute this success to ability and
applied effort. The two variations in attitude are very different in nature and can have a direct impact on an individual's self-esteem and self-worth.

Another related achievement motivation theory is self-efficacy, which is based on the assumption that individuals make judgments about their ability successfully to complete a task (Bandura, 1986). Based on this theory, individuals avoid tasks they do not believe they can complete successfully, but become involved in tasks they believe they can complete successfully. For example, if a student athlete believes that he/she is not capable of doing well in the classroom, he/she may avoid academic tasks. On the other hand, a super star athlete will put forth a great deal of energy towards excelling in football because he knows he is good. A star student and athlete will place time and energy into both realms.

Purpose of the Study

The purpose of this study was to develop an instrument to measure student athletes' motivation toward sports and academics. A scale to measure academic and athletic motivation was designed specifically for this study. This study also sought to examine differences in academic and
athletic motivation by gender and sport. Lastly, the study looked at the predictability of the scale on future academic performance. Three major research questions guided this study:

1. Is the scale reliable and does it have an underlying structure that makes sense?

2. Are there significant differences between groups of student athletes on motivation and ACT scores as a function of profile of sport and gender?

3. To what extent does motivation predict actual academic performance above and beyond academic aptitude?

It was hypothesized that the scale would yield two sub-scales, academic and athletic motivation. It was also expected that differences would exist on motivation scores with males and high profile athletes having higher athletic motivation compared to females and low profile athletes. Females and low profile athletes were expected to have higher academic motivation compared to males and high profile athletes.

**Definition of Terms**

The following definitions are outlined to explain the conceptual meaning of the variables used in this study:
**Academic Motivation** is defined as the degree to which a student athlete is energized toward excelling in academic tasks.

**Academic Aptitude** is defined as each student's ACT score.

**Actual Academic Performance** was a measure of how well student athletes performed in their courses.

**Athletic Motivation** was defined as the degree to which a student athlete is energized toward excelling in athletic tasks.

**Gender** was defined as male or female.

**High School Academic Performance** was defined as a student's cumulative high school grade point average.

**Motivation** was defined as the degree to which student athletes are directed toward, make choices about, persist on, and apply effort toward given tasks (e.g., academic or athletic).

**Profile of sport** was categorized by two levels, high and low. High profile sports were collegiate sports that were highly associated with a national professional sports organization. Low profile sports were college sports that were not highly associated with a national professional sports organization. Low profile sports may be associated
with a professional league; however, the distinction between high and low is the association with a highly visible national professional league in the United States.

Race/Ethnicity was defined as the racial and cultural background of a student athlete. Participants were coded as white or minority.

Rank was defined as a student athlete’s year in school of classification.

Scholarship status referred to whether or not a student athlete receives an athletic scholarship for participation in varsity sports.

Significance of Study

As intercollegiate athletic programs proliferate on college campuses, so does the concern for the academic well-being of these students. Understanding if and how student athletes are motivated toward academic and athletic tasks can help educators and administrators design effective programs to help student athletes develop high levels of motivation toward both categories of activity.

The results of this study will add to the existing research on student athletes and academic achievement. It is hoped that the results of this study will bring to light
a significant connection between motivation and the academic achievement of student athletes. If such a connection is supported, educators and administrators can use this knowledge as a tool for recruiting athletes with the highest potential for success as a student and an athlete. Further, counselors, athletic administrators, coaches, and educators can use this knowledge to facilitate development of a balance in motivation between performing well in the classroom and on the playing field.

Summary

Chapter I outlines the problem statement and the purpose of this study. Research questions that functioned as the foundation for this study were also outlined, in addition to conceptual definitions for the variables in this study. The remainder of this study was divided into four chapters. Chapter II will review related literature in this field of this study. The focal point of this chapter will be a review of empirical studies related to motivation towards academic and athletic achievement of student athletes. Chapter III describes the methodological design and procedures that will be utilized in this study. Operational definitions of the variables and a description
of the sample are also provided. Chapter IV contains the results of the study in reference to the four research questions that will be addressed in this study. Lastly, a discussion of the results, conclusions, and recommendations appear in Chapter V.
CHAPTER 2

REVIEW OF LITERATURE

The conflict between intercollegiate athletics and higher education is nothing new. University officials were opposed to intercollegiate athletic competition on college campuses as early as 1852 when the first intercollegiate competition took place (Davenport, 1985). During this time period, university clergymen believed that participation in sports would take away from religious and academic pursuits of the student body. Despite disapproval early on from university officials, intercollegiate athletics has continued to grow into the commercial enterprise that it is today.

This chapter will review the literature related to academic performance of student athletes at Division I universities, beginning with the implementation of Proposition 48. Graduation rates will also be reviewed followed by a discussion pertaining to the use of cognitive and noncognitive variables in measuring academic
performance. A brief review of the literature on educational and career goals of student athletes is also included. The chapter concludes with a review of motivational theories used in constructing the Student Athletes' Motivation toward Sports and Academics Questionnaire.

**Proposition 48**

In 1982, The American Council on Education (ACE) created an ad hoc committee for intercollegiate athletics. According to Bok (1985), the ad hoc committee was created to address scandals and other illegalities practiced by intercollegiate athletic programs across the country. In addition, resolutions brought forth from the ad hoc committee of college presidents set the foundation for Proposition 48.

Proposition 48 was passed at the 1983 NCAA convention but was not enforced until the 1986 academic year. The rule required student athletes to obtain a 2.0 grade point average in eleven core high school courses, and score a minimum of 700 on the Scholastic Aptitude Test (SAT) or 15 on the American College Test (ACT). The enactment of
Proposition 48 caused a lot of controversy, especially within the black community.

Several issues were raised about the appropriateness of Proposition 48, especially in determining eligibility for black student athletes. When Proposition 48 was created, there was not a representative from a historically black college included in the discussion. By the time an invitation was extended to a representative of color, the framework for Proposition 48 was already established (Funk, 1991). If a representative of color had been present initially, it is possible that some of the controversy that erupted due to Proposition 48 could have been resolved during its formation.

Although Proposition 48 was designed as an effort to improve academic achievement of student athletes (Sperber, 1990), some black coaches, civil rights activists, and community leaders were opposed to the rule. When Proposition 48 was passed in 1983, critics argued that the rule would have a disproportionate negative effect on black student athletes (Lapchick, 1996). The basis for this argument was that standardized tests (e.g., ACT and SAT) are considered by some as culturally biased tests. Considering that the majority of student athletes who
participate in basketball and football are black, requiring these students to meet standards based on tests that are considered culturally biased was thought to be unfair.

Further, critics thought that the rule would have a disproportionate negative impact on black student athletes, particularly in terms of eligibility to play and receive financial aid. In other words, the number of black student athletes benefiting from educational opportunities and scholarships provided through participation in college sports would be decreased as a result of this rule.

In response to several protests to Proposition 48, the NCAA added a partial-qualifier clause. Partial-qualifiers are defined as student athletes who only meet part of the academic requirement of Proposition 48. For example, a student athlete is considered a partial-qualifier if he/she earned a 2.0 in the eleven core courses, but did not get a 700 on the SAT, or vice versa. The clause states that partial-qualifiers are eligible for grant-in-aid, but are not allowed to compete or practice the first year of college and would in turn have only three, as opposed to four, years of eligibility to compete.

Several studies were conducted between 1983 and 1986 related to the effect Proposition 48 would have on Black
student athletes (Lapchick, 1996). It was predicted that 80% of black student athletes would be ineligible as a result of Proposition 48. In reality, 16% were ineligible when Proposition 48 was enforced in 1986; however, 85% of those students were black. Funk (1991) called Proposition 48 "...at best a quick fix solution..." that did not address the real academic issues faced by student athletes (p. 109). It can be argued that Proposition 48 was put in place more so as a corrective measure for the damage done to the credibility of American higher education over the years, caused by countless cases of scandals and academic fraud.

**Graduation Rates**

Since the initiation of Proposition 48, the NCAA has annually published graduation rates of student athletes compared to students in the general population. As early as 1989, a proposal better known as the "Student Right to Know Act" was underway and required the NCAA to publish graduation rates of student athletes by race, sport, and gender (Lederman, 1989). This legislation was proposed by Senator Bill Bradley and Representatives Tom McMillen and Ed Towns. The rule required the NCAA to publish graduation
rates of federally funded institutions by race, sport, and gender.

According to a recent NCAA graduation rate report ("Graduation rates up again;" 1997), student athletes have graduated at rates similar to students in the general student population every year since the entering class of 1986, the year Proposition 48 was instituted. In fact, the overall graduation rate of student athletes was similar to that of students in the general student population even before Proposition 48 was implemented ("Study shows graduation rates up," 1996). These results have changed very little over time.

The overall graduation rate for student athletes has held around 57 to 58 percent in comparison to the 56 to 57 percent graduation rate for students in the general student population. Again, graduation rates show that overall student athletes graduate at similar rates to the student population; however, all groups of student athletes are not graduating at rates equal to the general student population. For example, when graduation rates are analyzed by race, gender, and sport the results tell a very different story.
The first graduation report published under the Student Right to Know Act was made public in 1992 and reported data as far back as 1983 (Lederman, 1992). The results of the 1992 NCAA report on graduation rates yielded very interesting results, especially related to race, gender, and sport. It was reported that student athletes in every racial group outperformed general students of their race, respectively, with the exception of Asian student athletes. In addition, females in every racial group outperformed males within their respective racial group.

On a different note, student athletes who participated in baseball, track, and men's basketball lagged behind in graduation rates compared to other students. In particular, men's basketball players graduated at a rate of 38%; moreover, black men's basketball players graduated at an even lower rate of 29%. Football players had by far the worst graduation rate of all sports at 23%.

Two years later, when the graduation rate for the entering class of 1988 was calculated, similar results were found. According to Blum (1995), student athletes in general continued to graduate at rates similar to students in the general student population. The graduation rate for student athletes entering in 1988 actually increased to
58%. Women student athletes continued to graduate at higher rates than male student athletes, 69% compared to 53% respectively. Lastly, black student athletes continued to graduate at a rate considerably lower than the national average.

More specifically, black male basketball players graduated at a rate of 37% compared to a 50% graduation rate for white male basketball players. The graduation rate for football players entering in 1988 was 56%; however, black football players graduated at rate of 42%, 14 percentage points lower than the average for the sport. This phenomenon raises questions concerning why certain groups of student athletes fare worse academically at the college level than their peers. The overarching purpose of this research is to pose an answer to this question using motivation theory as a framework.

**Measuring Academic Achievement**

Proposition 48 serves as a stimulus for the debate about which factors should and should not be used to predict academic success at the college level. Astin (1975) suggests that non-cognitive factors also account for persistence in college. Specifically, he postulated that
students who become involved in campus life are more likely to persist, compared to students who do not. The divide in the line of research dealing with student athletes falls between the use of cognitive and non-cognitive variables in measuring academic achievement.

Cognitive Variables. Conducting research on student athletes' academic performance can become cumbersome, especially in terms of methodological appropriateness for completing such studies. The two most commonly used measures of academic achievement are grade point averages and graduation rates (Purdy, Eitzen, & Hufnagel, 1985). However, Funk (1991) argues that the use of grade point averages and graduation rates are inappropriate measures of academic achievement for student athletes, as well as students within the general student population.

The problem with grade point averages is that it is only representative of students' performance at a given time in a given program. However, this problem can be corrected by taking into consideration students' grade point averages over time. Analyzing cumulative grade point averages over two or three grading periods can be useful in
obtaining an accurate projection of a student’s overall academic performance.

Graduation rates can also be problematic, especially due to inaccurate reporting from institutions across the country. The NCAA has a specific formula for calculating graduation rates. According to the 1989–90 NCAA Manual, the calculation of graduation rates should include full-time freshman, entering six years prior to the fall term for the year in which the graduation rate is being calculated.

For example, the graduation rate for the year of 2000 would include all full-time freshmen that entered the university in the fall of 1995. It should be noted that this calculation formula does not include students entering with previous college credit (i.e., transfer students). The manual also provides a formula for calculating an adjusted graduation rate. This rate includes transfer students, excludes student athletes who left the university in good standing, and excludes students who continue to matriculate in good standing beyond five years. Naturally, the adjusted rate is the higher of the two; therefore, there is confusion in terms of which rate should be considered in conducting research and publishing graduation rates (Blum, 1992).
Non-cognitive Variables. Although test scores, grade point averages, and graduation rates are the most commonly used variables in measuring academic achievement, research suggests that cognitive measures should not be used solely to predict or paint an accurate picture of academic achievement for all student athletes (Sedlacek & Adams-Gaston, 1992; Snyder, 1996). Many other factors come into play such as innate ability, environment, type of institution, and motivation. Previous studies show that in order to obtain a well-rounded view of academic achievement for students, non-cognitive as well as cognitive measures must be considered (Tracey & Sedaleck 1985; Young & Sowa, 1992).

Several studies have been conducted to contest the sole use of cognitive variables (e.g., high school grade point averages, standardized test scores, high school rank) in predicting academic achievement among athletes (Petrie & Stoever, 1997; Sowa, Thomson, Bennett, 1989; Young & Sowa, 1992). Some studies indicated that cognitive variables were related to academic achievement in college (Ervin, Saunders, Gillis, & Hogrebe, 1985; Lang & Rossi, 1991). However, the weight of the evidence suggests that cognitive
variables should not be considered alone in predicting academic success for all students.

Lang and Rossi (1991) found that for athletes in their study, excessive participation in intercollegiate athletics resulted in low academic performance. Petrie and Stoever (1997) found that for female student athletes, high levels of social support were related to higher academic performance for freshman athletes.

Regarding black student athletes, Young and Sowa (1992) found that the only cognitive variable that predicted academic performance was high school grade point average. However, non-cognitive variables, such as positive academic self-concept, amount of community service rendered, and degree of long-term goal setting were also related to academic success for this sample of student athletes. Stuart (1985) found that football players performed as well as their non-athlete peers for the first two years of college, despite having lower levels of academic preparation. Overall, traditional variables that are cognitive in nature have not been supported as accurate predictors of academic achievement, especially for black student athletes.
**Education vs. Athletics**

Student athletes have a unique role on college campuses. In the spirit of amateurism, the title *student athlete* implies that they are students first, and athletes second (Rose, 1985). Student athletes are expected to perform well on the field or court and equally well in the classroom. These students, who are recruited based on their athletic ability, with little regard for their academic preparation, are expected to balance out the pressures of academics and athletics.

Often, student athletes experience conflict between academics, athletics, and social interests because these roles tend to work in opposition and become difficult to balance (Parham, 1993; Parmer, 1994). Student athletes, some of whom are underprepared for college level work, are expected to perform in the classroom comparable to their peers. Further, non-athletes do not have the same demands on their time and energy as student athletes.

Adler and Adler (1991) describe the conflict between the roles of student athletes as "role-engulfment" (p. 226). In their study of college basketball players, three essential roles of college athletes were outlined:
athletic, academic, and social. Moreover, it was found that these roles often conflict with one another. The demands of competing in college sports, such as time commitment and intense training, often led the more athletically inclined athletes to become inundated by their athletic responsibilities. The authors stated that: “these individuals found the demands and rewards of the athletic role overwhelming and became engulfed by it” (p. 27).

On a positive note, both Ryan (1989) and Pascarella and Smart (1991) found evidence that participation in intercollegiate athletics was positively related to motivation to earn a college degree. Ryan’s study focused on the impact of participation in college sports on four areas of affective development, 1) satisfaction with college, 2) motivation to complete a bachelor’s degree, 3) interpersonal skills, and 4) leadership skills.

The results of this study indicated that motivation to complete a college degree was only modestly related to participation in college sports. Two of the indicator variables for this relationship were being female and majoring in business. This suggests that the relationship between participation in college sports and motivation to
complete a degree was weak, and was applicable to female athletes and athletes who had decided on a major.

It is important to note that the student athletes who are not completing college degrees do not fit these characteristics. The majority of student athletes who are not graduating are black males who participate in revenue producing sports (Suggs, 1999). The sample of athletes used in this study does not indicate the sport of the participants, which is a key factor in interpreting these results. Most student athletes who participate in non-revenue producing sports do not seem to have a problem balancing the rigors of academic and athletic tasks.

Using data from the same source as Ryan (1989), Pascarella and Smart (1991) found similar results. However, the sample of students in this study consisted of all male athletes. The authors found that athletes were more likely to complete college degrees compared to non-athletes. Again, these results are questionable due to the fact that the sport of the participants is unknown.

On the other hand, studies have been conducted suggesting that participation in college sports had a negative relationship to educational attainment for certain groups of students. Blann (1985) conducted a study that
assessed the relationship between gender, class, level of competition, and the capacity to formulate education and career goals. The participants consisted of male and female athletes who participated in Division I and Division III athletic programs, and were categorized into two groups, high-level athletes and low-level athletes. The student athletes participated in a wide range of sports.

The results indicated that underclass athletes (i.e., freshmen and sophomores) did not formulate mature educational and career goals in comparison to underclass non-athletes. The authors justified this result by presuming that athletes at this level may be overly occupied with training and playing sports.

Research supporting the notion that involvement in extra-curricular activities is positively related to persistence in college caution that over-involvement in extra-curricular activities can have an inverse effect on academic performance and college persistence (Astin, 1975; Pascarella & Smart, 1991). Blann (1985) found that over-involvement and lack of forming mature career and educational goals was true of only the men in the study. The author explains this by the fact that 28% of the high-level male athletes indicated that they planned to play
their sport at the professional level. In contrast, only 4% of the high-level women indicated this intent.

In the same study, upper-class student athletes (i.e., juniors and seniors) showed no significant difference in career maturity in comparison to non-athletes. The author suggested that, over time, junior and senior athletes may have developed a realistic expectation for achieving "stardom" through sports; therefore, placing more emphasis on educational and career goals. This finding may also be a result of either underclass athletes dropping out as a result of over-participation in their sport or actually making it to the professional level, for which they leave school before their junior or senior year of college.

Thus far, the results of previous research indicate that the lure of professional sports may be specific to race, gender, year in school, and type of sport. Further evidence supports this assumption. Kennedy and Dimick (1987), in a study of the educational goals of football and basketball players, found that student athletes who participate in revenue producing sports had lower levels of career maturity as compared to other students.

These results may suggest that student athletes, especially black athletes, may have unrealistic
expectations of making it to the professional level. The authors argue that the results of their study differ from previous research (e.g., Blann, 1985) in that their study is specific to revenue producing sports as opposed to revenue and non-revenue sport participants.

Sailes (1996), in a more recent study, examined the professional expectations of male athletes from various Division I institutions across the country. Sailes (1996) found that African American student athletes had higher professional sport aspirations compared to their white peers. This study also yielded results specific to socio-economic status and motivation toward professional sport participation.

Upper income athletes had higher aspirations toward professional sports than middle and lower income student athletes. This finding does not support previous research suggesting that athletes from lower socio-economic backgrounds are more likely to aspire toward professional sport expectations (Oliver, 1980). However, the fact that the majority of the participants indicated coming from a middle-income family should be taken into consideration when interpreting this finding.
Results from the same study also indicated that student athletes had expectations of making it to the professional level whether they were considered "distinguished" or not. This finding was based on whether or not the student indicated receiving athletic honors (e.g., All American, All-Conference, Most Valuable Player, etc.). The author accounts for this by suggesting that athletics have a powerful impact on athletes, causing them to develop unrealistic expectations for athletic success. It would have been interesting if the author distinguished between the year in college and the number of athletic awards received to see if differences existed between athletes who had unrealistic expectations to go pro based on those criteria. Previously, Blann (1985) indicated that freshmen and sophomores were most likely to have unrealistic expectations for professional careers.

The results of this study did indicate which classifications of students had the highest expectations for professional sport careers. Contrary to Blann (1985), Sailes (1996) found that freshmen, juniors, and fifth year seniors held the highest expectations for playing professional sports. It can be agreed upon that freshmen enter college with unrealistic expectations for making it
to the professional level. Understanding the high expectations for juniors and fifth year seniors is a bit more confusing.

The author suggested that by junior year, athletes might receive more playing time than they did during their freshman and sophomore years. Further, by the fifth year, athletes may discover alternative ways to make it to the professional league (e.g., semi-professional, overseas, etc.). Again, this was only given as a possible explanation for this anomalous finding.

Lastly, the results of this study did not show a relationship between professional sport expectations and academic performance. In other words, student athletes who reported having above average grades (i.e., above 2.5 grade point average on a 4.0 scale) held aspirations to play at the professional level at rates similar to that of student athletes with below average grades. This finding contradicts previous research, which suggests that athletes who are overly involved in sport participation (with the expectation of going professional) are most likely to have poor academic performance (Harris, 1993; Lang & Rossi, 1991).
Motivation Theory Applied to College Athletes

Motivation can be defined as the intensity and direction of behavior (Silva & Weinberg, 1984). Intensity refers to how much effort an individual applies toward a given task. Direction indicates the choice to complete or not to complete a task. Motivation, when applied to student athletes, has the potential to explain or provide understanding related to successful and unsuccessful academic performance. Student athletes choose both to participate in their sport and attend college. However, the amount of effort or intensity applied to academic and athletic tasks may vary.

Achievement motivation theories, particularly the expectancy-value model, were used in creating the items on the scale to measure academic and athletic motivation for this study. A basic assumption of achievement motivation theory is that motivation toward a task can be determined by an individual's choice of, persistence on, and amount of effort applied to a task (Weiner, 1984). Related to this definition, individuals who are highly motivated to approach success tend to apply a great deal of effort and time toward successful completion of a chosen task.
Expectancy-value Theory. Expectancy-value theory, related to achievement behavior, is a function of two major components: 1) the probability that an individual will successfully complete a task; and 2) the value associated with successful completion of the task (Spence & Helmreich, 1983). Moreover, Eccles (1983) postulates that expectancy, or the probability of success is influenced by an individual's self-concept of his/her ability to successfully complete the task, and the level of difficulty associated with completing the task. The value aspect of a task is a function of the extent to which the task fulfills a need, aids in goal attainment, and is important in fulfilling a future goal.

Vroom (1964) elaborated on the theory, creating three basic elements—expectancy, instrumentality, and valence to explain behavior. Expectancy involves the probability that a certain level of effort will result in a specified goal accomplishment. Instrumentality refers to the reward aspect of performance. In other words, individuals seek information about what they will receive in return for successful completion of a task. The third element, valence, is related to the value associated with the reward given in turn for successful performance. Stated
differently, individuals determine how they value the rewards associated with completing a given task and decide whether to approach or not to approach the task.

For the purpose of this study, expectancy-value was informed by two additional personal belief theories, self-efficacy (Bandura, 1977) and attribution theory (Weiner, 1984). Each theory will be explained briefly, related to its application to measuring academic and athletic motivation.

Self-efficacy Theory. The basic assumption underlying self-efficacy theory is that individuals make judgments about their ability to successfully complete a task (Bandura, 1977). Based on this information, individuals decide which tasks to approach, as well as how much effort to apply toward and how long to persist over and above resistance on a task. Individuals tend to avoid tasks that they believe they cannot complete successfully, but become engaged in tasks they believe they can complete successfully. To that end, a student athlete who believes that he/she can excel in their sport is willing to approach the task, or put forth enough effort to succeed; however, a student athlete
who may have trouble in an academic subject is likely to avoid the task and not put forth the effort to succeed.

Four types of information inform individuals' self-efficacy expectations: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. Performance accomplishments are based on past experiences of success and failure. Previous and repetitive successes and failures are a form of information that increases or decreases personal self-efficacy. Success increases expectancy for future success and failure decreases self-efficacy.

Vicarious experiences also influence expectancy for success; however, these experiences are less influential compared to performance accomplishments. Vicarious experiences are developed through watching others perform a difficult task successfully. This experience influences an individual to believe that he/she can also complete the task successfully. The general attitude is: "If she can do it, then so can I."

Words of encouragement can also influence behavior, or at least influence an individual to apply more effort toward successfully completing a task. Verbal persuasion encourages individuals to believe that they can achieve a
task, particularly one that is of difficulty for the individual. Although this source of self-efficacy is weaker compared to performance accomplishments, it is nevertheless an easy and convenient way of attempting to influence behavior.

Emotional arousal results from the pressures associated with stressful predicaments. Emotional reactions, such as fear, anxiety, sweating, tension, etc., provide information about an individual’s perceived ability to successfully complete a task. Individuals are likely to believe they can complete a task when emotional reactions are low or minimized at the onset of and during a task.

Self-efficacy refers to an individual’s perceived capability to perform a given task. It is important to note that locus of control and self-efficacy represent two different aspects of the expectancy-value concept. An individual can believe that effort and reward are related but may not feel they are capable of performing the task (Dembo, 1991).

**Attribution Theory.** The basic assumption underlying attribution theory is that individuals seek explanations for the causes of behavioral outcomes (Weiner, 1992),
especially when the outcome is negative (Graham 1997). For example, if a student fails a test, he or she is likely to seek information to help explain why the negative outcome occurred. In conjunction with the assumption that people seek causes for the outcomes of their behaviors, Weiner (1972) outlines five basic determinants of success or failure, 1) ability, 2) effort, 3) task difficulty, 4) luck, and 5) help from others.

In determining which causal attributes (e.g., luck, ability, effort, etc.) contribute to success and failure, Tuckman (1997) indicates that individuals use three sources of information. The first source of information is past history of success and failure. For example, if a student athlete consistently excels in his or her sport, he or she will likely attribute this success to high ability. On the other hand, if a student athlete is consistently failing in the classroom, he or she may attribute the failure to lack of ability.

The second source in determining causes of behavioral outcomes is the performance of others doing the same task. In the example of failing in the classroom, if many others are failing in the classroom as well, the student may attribute failure to the level of difficulty of the course,
as opposed to lack of ability. Another source of information is the amount of time spent on the task. The amount of effort applied to a task can be determined by the amount of time spent on the task. Therefore, if a student spends a great deal of time on a task and succeeds, then he or she is likely to attribute success to effort. Lastly, randomness of outcome is a source of information about the cause for a behavioral outcome. If a person perceives that he or she has no control over an outcome then he or she is likely to attribute success to good luck and failure to bad luck.

Tuckman (1997) continues that there are three dimensions of causal attributes, locus of causality, stability, and controllability. Locus of causality refers to whether the outcome is perceived as internal or external. Internal causes (e.g., ability and effort) are generated from within. On the other hand, external causes (e.g., luck and help from others) come from outside.

Stability refers to the consistency of the attribute, that is, the amount it can change over time. If an attribute is stable (e.g., ability, task difficulty), then it is less likely to change over time. However, if the attribute is unstable (e.g., effort, luck), then future
outcomes will not necessarily be perceived as unchangeable. Therefore, the stability of an attribute elicits an emotional reaction (e.g., hopelessness) to the outcome for future tasks.

Lastly, controllability refers to "the extent to which a causal attribute is within a person's control and can be intentionally altered by choice" (Tuckman, 1997, p. 304). Effort is the only one of the aforementioned attributes that is controllable. Effort is the only factor that can be altered, at will by the individual, to change an outcome to success or failure.

The combination of achievement motivation theories mentioned previously, serve as the theoretical framework underlying this study. The assumptions and underlying principles were used as a framework to measure academic and athletic motivation in this study.

There have only been a few studies linking motivation to the academic performance of student athletes. There has been evidence of academic, athletic, and social role conflict (Adler & Adler, 1991); however, few studies have investigated the behavioral patterns underlying these conflicting roles.
Simons, Van Rheenen, and Covington (1999) conducted one of the few studies examining student athletes' academic motivation. The authors employed self-worth theory, which postulates that self acceptance is achieved through self and outside opinions about one's ability to succeed in competitive situations. Success reflects high ability and increases self-worth. On the other hand, failure attributed to lack of ability decreases self-worth.

The authors developed a typology to explain student athletes' motivation based on two dimensions, approaching success and avoiding failure. The four motivational types were labeled: 1) Success-Oriented; 2) Overstrivers; 3) Failure-Avoiders; and 4) Failure-Acceptors.

The findings suggest that student athletes who were success-oriented and overstrivers had higher high school and college academic performance compared to failure-avoiders and failure-acceptors. Moreover, failure-avoiders and failure-acceptors were more devoted to athletic related tasks compared to success-oriented and overstrivers. The findings also support characteristics such as "commitment to athletics, less intrinsic motivation, less academic self-worth, and more self-handicapping excuses all play a
CHAPTER 3

METHODS

Participants

The participants in this study were selected from eight varsity team sports at large research university in the mid-west. The eight sports represented a stratified sample of high and low profile sports by gender. Men's basketball and football represented high profile male sports. Men's lacrosse and men's volleyball represented low profile male sports. Women's basketball and women's softball represented high profile female sports. Women's field hockey and women's lacrosse represented low profile female sports.

Participants were selected from one of the largest athletic programs in the country, offering a total of 35 sports for men and women. Specifically, there were 18 individual and team sports for men, and 19 individual and team sports for women (men and women compete together in two of the sports). Sports for women consisted of rifle,
field hockey, lacrosse, diving, swimming, fencing, tennis, golf, crew, cross country, track and field, pistol, softball, basketball, gymnastics, soccer, synchronized swimming, volleyball, and ice hockey. Sports for men included football, lacrosse, rifle, baseball, swimming, basketball, diving, fencing, tennis, wrestling, golf, ice hockey, cross country, track and field, pistol, gymnastics, soccer, and volleyball.

As of 2001, there were approximately 850 student athletes participating in varsity sports. Of the 850 student athletes, approximately 15% were black, and 4% were classified as other minority (i.e., American Indian, Asian/Pacific Islander, Hispanic, and minority unknown). The majority of the student athletes at this institution (81%) were white.

Related to gender, females comprised 42% of the student athlete population. Most (58%) of the student athletes were male. Approximately 30% of student athletes received full athletic scholarships, 30% received partial scholarships, while 40% did not receive athletic grant-in-aid for participation in varsity sports.

Participants were selected from team sports only. It is likely that the dynamics associated with playing an
individual versus a team sport are different, especially in relation to competitiveness and opportunities to play at an elite or professional level.

Operational Definitions of Variables

**Academic Motivation Score.** Academic motivation was a continuous variable, defined as the degree to which student athletes were motivated to achieve various academic outcomes. Academic motivation was measured using the Student Athlete Motivation toward Sports and Academics Questionnaire (SAMSAQ). One sample item measuring this construct was, “It is important to me to learn what is taught in my courses.” Another sample academic motivation item was, “During the years I compete in my sport, completing a college degree is not a goal for me.” The questionnaire consisted of fifteen items intended to measure academic motivation. Academic motivation score was operationally defined as the summated score of the academic motivation items for each participant.

**Athletic Motivation Score.** Athletic motivation was also a continuous variable, characterized as the degree to which student athletes were motivated to achieve athletic tasks. A sample item from the SAMSAQ to measure this construct
was, "I am confident that I can make it to an elite level in my sport." Another sample item was, "It is worth the effort to be an exceptional athlete in my sport." There were fifteen items on the questionnaire intended to measure athletic motivation. Athletic motivation was operationally defined as the summated score for the athletic motivation items on the questionnaire for each participant.

**Scholarship Status.** Scholarship status referred to whether or not a participant received an athletic scholarship. Some student athletes may have received a full athletic scholarship; whereas, others may have received a partial scholarship. Some student athletes did not receive any athletic grant-in-aid for participating in varsity sports. Scholarship status was coded as full scholarship, partial scholarship, or no award.

**Gender.** Gender was operationally defined as male or female. Gender was identified for each participant through responses to the demographic question, "What is your gender/sex?" on the SAMSQA.

**Race/Ethnicity.** Race/Ethnicity was coded as white or minority. The minority category consisted of Black, Hispanic, Asian/Pacific Islander, American Indian/Native Alaskan, and minority unknown. These were the demographic
categories used by the athletic department to identify the racial/ethnic identity of the student athlete population. This variable was identified for each participant by responses to the race/ethnicity demographic question on the SAMSAQ. Participants were asked to check the category that represented their racial/ethnic identity.

**Academic Aptitude.** Academic aptitude was measured as scores on the SAT or ACT. A conversion chart from the university registrar's office was used to convert SAT scores to ACT scores. Test scores for each participant were obtained from university records.

**High School Academic Performance.** High school academic performance was quantified as each participant’s cumulative high school grade point average. Cumulative high school grade point average for each participant was obtained from university records.

**Rank.** Rank was defined as the number of years of participation in varsity sports. Rank was not synonymous with academic classification. For example, a student athlete may be rank 2, meaning the athlete is in his or her second year of competition; however, the same student may not be classified as a sophomore according to the number of hours earned at the university. Rank, as defined here, was
the term of preference because we were interested in the number of years each participant competed, and the number of years each participant had left to compete in his or her sport at the college level. Rank was scored on a five-point scale, red-shirt (i.e., sitting out the first year), first year, second year, third year, and four years or more.

Profile level of sport. Profile level of sport was measured on a two-point scale, low profile and high profile. Profile level of sport referred to the professional orientation of a college sport, as measured by its association with a national professional sports organization in the United States, and opportunities for college athletes to play at an elite level. For example, college football and men’s basketball have a high association with national professional organizations, the National Football League (NFL) and the National Basketball Association (NBA). Therefore, men’s basketball and football represented the high profile male sports in this study.

Men’s lacrosse and men’s volleyball are not highly associated with a national professional organization. There are opportunities to play men’s volleyball overseas; however, there is not a strong connection to a nationally
known professional team in the United States. There are professional opportunities to play men's lacrosse as well; however, these opportunities are not on a national level like those for football and men’s basketball. Of the male team sports within the athletic department, men’s volleyball and men’s lacrosse have less of a national professional association compared to football and men’s basketball; therefore, they were considered low profile male sports in this study.

Professionalism associated with women’s sports has increased over the last decade. Two female sports are highly affiliated with a national professional organization, basketball and softball. The national professional organization for women’s basketball is the Women’s National Basketball Association (WNBA). Women’s softball has a national league in the United States as well. Therefore, basketball and softball were considered high profile sports for females.

Taking into consideration all of the female team sports within the athletic department, volleyball and field hockey provide fewest opportunities to play at the professional level. Unlike women’s basketball and softball, women’s volleyball and women’s field hockey are not
associated with a nationally known professional team in the United States. Therefore, women’s volleyball and women’s field hockey were categorized as low profile sports for this study.

Actual Academic Performance. Actual academic performance was a continuous variable, defined as each participant’s performance in the classroom over the academic year. This variable was quantified as the cumulative grade point average over autumn and winter quarters for the 2001-2002 academic year.

Procedures

Permission was obtained from the Behavioral and Social Sciences Institutional Review Board (IRB) before collecting data. Permission was also obtained from the head athletic director and a letter was sent to head coaches soliciting their cooperation in the data collection process. All eight head coaches replied and agreed to participate in the study, allowing data to be collected during academic team meetings.

Data were collected during academic team meetings from student athletes who participated in eight sports, men’s basketball, football, men’s volleyball, men’s lacrosse,
women's basketball, women's softball, women's lacrosse, and women's field hockey. Each student athlete present at the individual team meetings received a packet containing two consent forms and a copy of the questionnaire. Prior to completing the questionnaire, an oral script was read describing the nature and level of involvement for participation in the study. Participation in the study was voluntary; therefore, some student athletes declined. Each participant was required to sign one consent form and keep the other copy for his/her record. Participants were asked to place the completed questionnaire and one signed consent form in the original packet and place the entire packet in a box.

Participants were instructed not to place their name or any other identifiable information on the questionnaire. The consent forms and the questionnaires were coded with matching numbers to increase confidentiality. For example, the participant who received questionnaire #1 also received the consent form coded #1. Participants were then identified by code.

Actual academic performance data were collected at various points throughout the academic year. Grade point averages for each participant were collected at the end of
autumn and winter quarters. An averaged grade point average over the two quarters was computed for each participant.

**Instrumentation**

The title of the questionnaire was: *Student Athletes' Motivation toward Sports and Academics* (SAMSAQ). The questionnaire was designed by the researcher to measure academic and athletic motivation. The SAMSAQ consisted of 30 Likert-scaled items and eight demographic information questions. The Likert-scaled items were measured on a six-point scale ranging from very strongly disagree (VSD = 1) to very strongly agree (VSA = 6). Participants were asked to indicate their level of agreement with each statement.

The questionnaire contained 15 items intended to measure academic motivation and 15 items intended to measure athletic motivation. The statements were worded both positively and negatively, and randomly distributed throughout the questionnaire. This technique was important to prevent the likelihood of the participants falling into a response set, or selecting the same response for each item without actually reading the statement.
Reliability

For the purpose of this study, reliability was defined as the consistency of the items in measuring academic and athletic motivation. Reliability was measured by calculating a Cronbach’s alpha coefficient for each scale. Cronbach’s alpha is a measure of internal consistency that determines inter-item consistency or homogeneity of the items on an instrument (Mueller, 1986). The coefficient ranges from .00 to 1.0. A coefficient with a value closer to 1.0 yields a more reliable measure and is an indication that the items on the scale “hang together.”

Design

This study used a causal comparative research design. The independent variables in this study were not manipulated; rather, they occurred naturally. Causal comparative, or ex-post facto, research designs are appropriate when independent variables are measured, as opposed to being manipulated (Tuckman, 1999).

Factor analysis and a measure of internal consistency (i.e., Cronbach’s alpha) were used to measure or uncover the underlying structure of the scale. Composite scores for
each scale were calculated for each participant. The software program CEFA was used to analyze the data.

Multiple Analysis of variance was used to measure group differences on the motivation sub-scales and ACT score. Hierarchical regression analysis was used to measure the extent to which motivation scores predict academic performance above and beyond academic aptitude.
CHAPTER 4

RESULTS

Sample

A total of 236 student athletes from eight varsity sports participated in this study. Data were collected from participants in the following sports: football; men’s and women’s basketball; men’s and women’s lacrosse; women’s field hockey; women’s softball; and men’s volleyball. The actual number of student athletes in all eight sports was 310, for a response rate of 76%.

The demographic characteristics for the sample are presented in Table 4.1. Of the 236 participants, 33% were female and 67% were male. The majority of the participants (70%) were White, while 30% were Minority students. The majority of participants indicated that college was the highest level of education completed by their mothers (34%) and fathers (34%).
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<tr>
<td>Graduate School</td>
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</table>

Table 4.1: Demographic Frequencies and Percent for Sample
Table 4.1 (continued)

<table>
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<th>Variable</th>
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</tr>
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<td>42</td>
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<tr>
<td>College</td>
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<td>Graduate School</td>
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<td>Eligibility Years Remaining</td>
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<tr>
<td>Four</td>
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continued
Table 4.1 (continued)

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<th>Variable</th>
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<tr>
<td>MFB (HP)</td>
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<td>37</td>
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<td>MBB (HP)</td>
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<td>7</td>
</tr>
<tr>
<td>WBB (HP)</td>
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<td>6</td>
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<tr>
<td>WSB (HP)</td>
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<td>8</td>
</tr>
<tr>
<td>MVB (LP)</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>MLA (LP)</td>
<td>39</td>
<td>17</td>
</tr>
<tr>
<td>WFH (LP)</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>WLA (LP)</td>
<td>27</td>
<td>11</td>
</tr>
</tbody>
</table>

Note. HP stands for high profile. LP stands for low profile. n = 236.
Thirty-nine percent of the participants reported that they were on full scholarship; 31% received partial scholarships; and 29% received no aid for participating in their sport. The majority of the participants (41%) reported having 3-4 years of eligibility remaining, and 25% reported having two years remaining. Only 18% reported one year of eligibility remaining, while 16% reported zero years of eligibility left after the 2001-2002 season.

The majority of the participants participated in football (37%). Forty-four percent of the participants were classified as high profile male athletes; 14% as high profile female athletes; 23% as low profile male athletes; and 29% as low profile female athletes.

Subscale Structure (Research Question 1)

Exploratory factor analysis (EFA) and reliability estimates were used to confirm the underlying structure and internal consistency of the items on the questionnaire. A basic assumption of factor analysis is that multivariate data are not completely random; rather, an underlying structure exists that can be studied (MacCallum, 2001). The objective of factor analysis is to understand and
uncover the underlying structure that produces correlations between measured variables.

Considering that the SAMSAQ was developed specifically for this study, exploratory factor analysis was appropriate to determine the number and nature of latent variables (i.e., factors) measured by the scale, and the amount of influence of the factors on the measured variables. Exploratory factor analysis is appropriate when the researcher has no idea about the nature and number of latent variables or factors (MacCallum, 2001).

Browne, Cudeck, Tateneni, and Mels (1999) developed a software program called Comprehensive Exploratory Factor Analysis (CEFA) to conduct exploratory factor analysis. This program is unique because it produces a measure of model fit, as well as confidence intervals for model fit estimates, factor loading standard errors, and factor correlations.

A number of measures were taken into consideration to determine the number of factors to retain. MacCallum (2001) suggests that no one single mechanical approach or rule should be used alone in determining the number of factors to retain. Instead, a combination of measures and
rules should be considered simultaneously, including the interpretability of the factors.

The eigenvalue greater than one rule, scree test, root mean square error of approximation (RMSEA), and interpretability were used in conjunction to determine the number of factors to retain in the model for this study. The eigenvalue greater than one rule, also known as the Kaiser-Guttman rule, suggests that the number of eigenvalues greater than one will be the lower bound for the number of factors (i.e., the weakest lower bound).

The scree test involves plotting a series of eigenvalues in order to identify the largest drop in the sequence. The cut-off point refers to the last major drop in the sequence of eigenvalues. The number of eigenvalues before the cut-off point represents the number of factors that should be retained (MacCallum, 2001).

The RMSEA value is a measure of how well the model fits the data (MacCallum, 2001). RMSEA values closer to .00 indicate close fit of the model to the data. RMSEA values that approach .1 and higher represent unreasonable or poor fit of the model to the data. The confidence interval for the RMSEA value is a measure of precision and a better indication of fit over repeated samples.
EFA Model 1. In developing the SAMS AQ it was hypothesized that the scale would yield two factors, an academic motivation factor and an athletic motivation factor. This model was not supported. There were a total of six eigenvalues greater than one; however, three eigenvalues accounted for the largest amount of variance. The scree test supported a three-factor model; although, in viewing the scree plot it is clear that there are two factors that account for a larger portion of the variance explained than the third factor.

The RMSEA value for the two-factor model was .094. This value was just shy of being unacceptable (i.e., a value of .1 of greater). The RMSEA confidence interval for the two-factor model was (.088; .100), which indicates that over the repeated samples the fit of the model would range from mediocre to poor. Therefore, the two-factor model was not the model of choice.

Item-to-total correlations and Cronbach’s alpha were used to measure the internal consistency of the items on each subscale of the original model. Although the two-factor model was not the model of choice, these measures gave an indication of which items were problematic in the model. Three items were eliminated due to low
I6 The amount of work required in my courses interferes with my athletic goals

I16 Participation in my sport interferes with my progress towards earning a college degree

I24 I will be able to use the skills I learn in my sport in other areas of my life outside of sports

---

Table 4.2: Items Deleted from the SAMSAC

item-to-total correlations and low reliability. The three deleted items are listed in Table 4.2.

EFA Model 2. The three-factor model was the model of choice for this study. The three-factor model consisted of 27 items instead of 30 items. The factor loadings and reliability estimates for each sub-scale are illustrated in Table 4.3. Two items loaded high on two of the three factors; therefore, the two items were used in computing composite scores for both factors. The relationship, however, was reversed on the opposite factor. In other words, the composite score for the opposite factor was computed using the reversed scale for both items respectively.
<table>
<thead>
<tr>
<th>Item</th>
<th>Student Athletic Motivation</th>
<th>Career Athletic Motivation</th>
<th>Academic Motivation</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>I2</td>
<td>.67</td>
<td>.08</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>I12</td>
<td>.75</td>
<td>-.01</td>
<td>.16</td>
<td></td>
</tr>
<tr>
<td>I13</td>
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<td></td>
</tr>
<tr>
<td>I14</td>
<td>.72</td>
<td>.05</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>I15</td>
<td>.75</td>
<td>.19</td>
<td>.10</td>
<td></td>
</tr>
<tr>
<td>I25</td>
<td>.41</td>
<td>-.01</td>
<td>-.43</td>
<td></td>
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<tr>
<td>I27</td>
<td>.67</td>
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<td>.86</td>
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<tr>
<td>I8</td>
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<td>I21</td>
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<tr>
<td>I23</td>
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<td>I25</td>
<td>.41</td>
<td>-.01</td>
<td>-.43</td>
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<tr>
<td>I26</td>
<td>.05</td>
<td>-.05</td>
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<tr>
<td>I28</td>
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</tr>
<tr>
<td>I30</td>
<td>.06</td>
<td>-.02</td>
<td>.47</td>
<td>.79</td>
</tr>
</tbody>
</table>

Table 4.3: Factor Loadings - Oblique Rotation. Maximum Likelihood Extraction (n = 236). RMSEA = .069; RMSEA CI (.061; .077).
I2 Achieving a high level of performance in my sport is an important goal for me this year (3.0 or above)

I12 It is important for me learn the skills and strategies taught by my coaches

I13 It is important for me to do better than other athletes in my sport

I14 The time I spend engaged in my sport is enjoyable to me

I15 It is worth the effort to be an exceptional athlete in my sport

I17 I get more satisfaction from earning an "A" in a course toward my major than winning a game in my sport (reversed)

I25 I get more satisfaction from winning a game in my sport than from getting an "A" in a course toward my major

I27 I am willing to put in the time to be outstanding in my sport

Table 4.4: Items Loading on the Student Athletic Motivation (SAM) Sub-scale

Interpretation of the rotated factor solution with 27 items and three factors extracted yielded acceptable fit of the model to the data. The RMSEA value was .067 and the confidence interval was (.061; .077), which was much better than the previous model.

Moreover, the items that loaded on each factor were interpretable. The items loading on each factor shared
I8 I chose to play my sport because it is something I am interested in as a career

I9 I have some doubt about my ability to be a star athlete on my team

I19 I am confident that I can be a star performer on my team this year

I20 My goal is to make it to the professional level or Olympics in my sport

I22 I am confident that I can make it to an elite level in my sport (Professional/Olympics)

Table 4.5: Items Loading on the Career Athletic Motivation (CAM) Sub-scale

common characteristics that aided in naming the factors appropriately. The first factor was named student athletic motivation and consisted of eight items. Table 4.4 contains the items loading on the student athletic motivation sub-scale. The second factor was named career athletic motivation and consisted of five items. The items loading on the career athletic motivation sub-scale are listed in Table 4.5. The third factor was named academic motivation and consisted of sixteen items. Table 4.6 contains the items loading on the academic motivation sub-scale.
I1  I am confident that I can achieve a high grade point average this year (3.0 or above)

I3  It is important to me to learn what is taught in my courses

I4  I am willing to put in the time to earn excellent grades in my courses

I5  The most important reason why I am in school is to play my sport (reversed)

I7  I will be able to use what is taught in my courses in different aspects of my life outside of school

I10 I chose (or will choose) my major because it is something I am interested in as a career

I11 Earning a high grade point average (3.0 or above) is not an important goal for me this year

I17 I get more satisfaction from earning an “A” in a course toward my major than winning a game in my sport

I18 During the years I compete in my sport, completing a college degree is not a goal for me

I21 I have some doubt about my ability to earn high grades in some of my courses

I23 I am confident that I can earn a college degree

I25 I get more satisfaction from winning a game in my sport that from getting an “A” in a course toward my major (reversed)

I26 It is not important for me to perform better than other students in my courses

I28 The content of most of my courses is interesting to me

I29 The most important reason why I am in school is to earn a degree

I30 It is not worth the effort to earn excellent grades in my courses

Table 4.6: Items Loading on the Academic Motivation (AM) Subscale
Reliability. Reliability is a measure of how consistent an instrument is in measuring what it is supposed to measure (Ary, Jacobs, & Razavieh, 1996). Given that the SAMSAC was administered to the participants once, a measure of internal consistency was used to assess the reliability of the scale. Specifically, Cronbach’s alpha was used and is appropriate when items on a scale have a range of values (e.g., Likert scaled items). Alpha coefficients range from 0 to 1. High alpha coefficients (e.g., .85) indicate a high level of consistency of the items on a scale in measuring what they are supposed to measure.

Reliability estimates for each sub-scale on the SAMSAC were fairly high. Cronbach’s alphas were computed for the items on each of the three sub-scales separately (See Table 4.3). The alpha for the student athletic motivation sub-scale was .86. The alpha for the career athletic motivation sub-scale was .84. The alpha for the academic motivation sub-scale was .79.

Relationships among variables

Simple bivariate correlations were used to examine relationships among the variables in this study. Table 4.7 includes Pearson r coefficients for 11 variables in
<table>
<thead>
<tr>
<th></th>
<th>SAM</th>
<th>CAM</th>
<th>AM</th>
<th>AVGGPA</th>
<th>MEDU</th>
<th>FEDU</th>
<th>GENDER</th>
<th>RACE</th>
<th>AWARD</th>
<th>CLASS</th>
<th>ACT</th>
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<tr>
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<td>CAM</td>
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<td></td>
</tr>
<tr>
<td>MEDU</td>
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<td>.128</td>
<td>.172**</td>
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<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>FEDU</td>
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<td>-.192**</td>
<td>.132</td>
<td>.271***</td>
<td>.524***</td>
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<td></td>
<td></td>
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<tr>
<td>GENDER</td>
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<td>.277***</td>
<td>-.158'</td>
<td>-.097</td>
<td>.008</td>
<td>-.025</td>
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<td></td>
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<tr>
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<td>-.021</td>
<td>-.357***</td>
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<td>-.301***</td>
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<td>.386***</td>
<td>.243***</td>
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<td>-.027</td>
<td>-.465***</td>
<td>-.368***</td>
<td>-.059</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table 4.7: Correlation Matrix of Variables.

Note: '*' $p < .05$, '** $p < .01$, *** $p = .000$.

SAM = student athlete motivation; CAM = career athletic motivation; AM = academic motivation; MEDU = mother’s highest level of education; FEDU = Father’s highest level of education.
this study. The SAM score had a strong positive relationship to CAM score ($r = .438; \ p = .000$) and gender ($r = .250; \ p = .000$). Male athletes had higher SAM scores than female athletes. The CAM score was negatively related to actual academic performance ($r = -.236; \ p = .000$) and ACT score ($r = -.430; \ p = .000$). However, the CAM score had positive relationships to gender ($r = .277; \ p = .000$), race ($r = .435; \ p = .000$), and scholarship award ($r = .483; \ p = .000$). Athletes who were male, minority, and received full scholarships had higher CAM scores than athletes who were female, white, and received no athletic scholarship award. Academic motivation was positively related to actual academic performance ($r = .351; \ p \neq .000$).

Actual academic performance was more positively related to highest level of father’s education ($r = .271; \ p = .000$) than highest level of mother’s education ($r = .172; \ p < .01$). Actual academic performance also had a strong positive relationship to ACT score ($r = .386; \ p = .000$). However there was a negative relationship between actual academic performance and race ($r = -.357; \ p = .000$). Minority athletes had lower grade point averages than white athletes.
There was a positive relationship between race and scholarship award \((r = .314; p = .000)\). Minority athletes received more full scholarships than White athletes. There was a negative relationship race and ACT score \((r = -.465; p = .000)\). Minority athletes had lower ACT scores than White athletes. Lastly, scholarship award had a negative relationship to ACT scores \((r = -.360; p = .000)\). Student athletes who had full scholarships had lower ACT scores than student athletes who did not receive an athletic scholarship.

**Differences in Motivation and ACT scores (Research Question 2)**

Multiple analysis of variance (MANOVA) was used to test for differences between group means on motivation and ACT scores by gender and profile of sport. The basic assumptions of analysis of variance (ANOVA) are that scores or observations are independent, scores are normally distributed, and variances of the scores are equal (Keppel, 1991). Independence of scores means that each score or observation is not related to any other observation in the study. Normality indicates that the observations or scores take on the shape of a bell-curve, indicating a normal
distribution of scores. The homogeneity of variance assumption requires variances between scores to be equal.

Multiple analysis of variance is an analytic procedure that takes into account correlations between two or more dependent variables (Bray & Maxwell, 1985). The major difference between ANOVA and MANOVA is that ANOVA evaluates differences between group means on one dependent variable, while MANOVA evaluates differences between group means on more than one dependent variable. MANOVA should be used if dependent variables are correlated in the same direction and is more powerful than analyzing dependent variables separately.

Two separate 2X2 (gender X profile) MANOVAs were used to measure group differences on the AM and ACT scores, and on the CAM and SAM scores. Table 4 includes means and standard deviations for gender and profile of sport on motivation and ACT scores. The CAM and SAM scores were highly correlated ($r = .44; p = .000$). The AM and ACT scores were not significantly correlated but shared the same direction ($r = .13; ns$).

Means and standard deviations for groups by gender and profile on each motivation sub-scale score and ACT score are reported in Table 4.8. A problem with homogeneity of
<table>
<thead>
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<th>Group</th>
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<th>CAM</th>
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<th>AM</th>
<th>ACT</th>
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</thead>
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</tr>
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</tr>
<tr>
<td>M</td>
<td></td>
<td>21.93</td>
<td>38.20</td>
<td>72.97</td>
<td>20.37</td>
</tr>
<tr>
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<td>3.38</td>
</tr>
<tr>
<td>Low Profile</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>18.28</td>
<td>39.45</td>
<td>70.88</td>
<td>24.38</td>
</tr>
<tr>
<td>SD</td>
<td></td>
<td>4.65</td>
<td>4.60</td>
<td>8.67</td>
<td>2.75</td>
</tr>
<tr>
<td>Female</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>15.89</td>
<td>35.99</td>
<td>75.56</td>
<td>22.66</td>
</tr>
<tr>
<td>SD</td>
<td></td>
<td>5.34</td>
<td>6.12</td>
<td>9.34</td>
<td>3.69</td>
</tr>
</tbody>
</table>

Table 4.8: Cell Means and Standard Deviations of Motivation Sub-scale and ACT Scores by Gender and Profile

Variance for the CAM score was detected in the results of the study. Violating the homogeneity of variance assumption indicates unequal variances across groups (Keppel, 1991). Although the histogram of the CAM scores illustrates a fairly normal distribution (see figure 10), the SPSS output indicated a violation of homogeneity of variance.
Having equal cell sizes would have alleviated the problem of heterogeneity; however, obtaining equal sample sizes was not possible due to the design of the study. Although ANOVA is a robust statistical technique, the results associated with the CAM score should be interpreted with caution.

The MANOVA results for the CAM and SAM scores indicated an overall main effect of profile (Wilks’ $F = 15.832; p = .000$) and gender (Wilks’ $F = 10.032; p = .000$). An overall interaction effect of gender and profile was not present in the analysis (Wilks’ $F = .321; ns$).

Separate univariate $F$ ratios for the dependent variables (CAM and SAM scores) revealed that gender had a main effect on career athletic motivation ($F = 11.24; p = .001$), and student athletic motivation ($F = 17.36; p = .000$). As evident from the cell means, females had lower CAM and SAM scores than male athletes. There was also a main effect of profile on CAM score ($F = 19.57; p = .000$). High profile athletes had higher CAM scores than low profile athletes. There was no effect of profile on student athletic motivation. No interaction effects of gender and profile were present on CAM and SAM scores.
The results of the 2X2 MANOVA for academic motivation and ACT scores revealed an overall interaction effect of profile and gender (Wilks’ $F = 3.49; p < .05$). There was also a main effect of gender (Wilks’ $F = 4.810; p = .01$) and profile (Wilks’ $F = 19.24; p = .000$), but both effects were qualified by the higher order interaction effect.

Separate Univariate F ratios for AM and ACT scores indicated a main effect of gender on AM score ($F = 6.82; p = .01$). The cell means indicated that females had higher AM scores than males. There was not a main effect of profile or an interaction effect of gender and profile on AM score. An interaction effect of profile and gender was present on ACT score ($F = 5.53; p < .05$). Low profile males had the highest mean ACT score, followed by low profile females, high profile females, and high profile males, respectively. A main effect of profile on ACT score ($F = 35.35; p = .000$) was present as well, but it was qualified by the higher order interaction effect.

Predicting Academic Performance (Research Question 3)

Multiple regression analysis has two major purposes, explanation and prediction. Further, multiple regression is appropriate when both the independent and the dependent
variables are continuous (Cohen and Cohen, 1983). There are four major assumptions of regression analysis. The first assumption is that a linear relationship exists between the independent and dependent variable. The second assumption is that residuals are normally distributed. The third assumption is that residuals have constant variance (i.e., homoscedasticity). The last assumption is that residuals are independent of one another.

Hierarchical regression analysis was used to examine the extent to which motivation scores predicted future academic performance. The sample size for the regression analysis decreased from 236 to 226. Two participants were unidentifiable, and eight participants withdrew from school at some point after the survey was administered and before grades were posted for autumn and winter quarters. The majority of the participants that withdrew were football players.

Table 4.9 contains the results from the hierarchical regression analysis. The independent variables were entered into the equation in steps. ACT score was entered in block one. Ideally, high school grade point average would have been entered along with ACT score; however, there were too many missing values. University records reported final high
<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>t</th>
<th>p</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>ACT Score</td>
<td>.069</td>
<td>.197</td>
<td>.000</td>
<td>.149</td>
<td>.149***</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAM</td>
<td>-.013</td>
<td>-1.336</td>
<td>.164</td>
<td>.251</td>
<td>.102***</td>
</tr>
<tr>
<td>CAM</td>
<td>-.001</td>
<td>-.086</td>
<td>.932</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AM</td>
<td>.022</td>
<td>4.958</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.9: Hierarchical Regression for Variables Predicting Actual Academic Performance ($n = 226$).

Note. ***p = .000; Standard error = .633; Adjusted $R^2 = .238$; Model: $F = 18.545; p = .000$.

school grade point averages for only 44 of the participants. Mean imputation would have been inappropriate given the number of missing values; therefore, only ACT score was entered in block one.

The motivation scores - CAM, SAM, and AM - were entered simultaneously in block two. Actual academic performance was the dependent variable, defined as the average of autumn and winter grades. ACT score accounted for approximately 15% of the variance in actual academic performance ($F = 39.33; p = .000$). Motivation scores

79
accounted for an additional 10% of the variance in actual academic performance, above and beyond ACT score (F = 18.55; p = .000). In the overall regression model, only ACT and AM scores were significant predictors of actual academic performance. The CAM and SAM scores had a negative, but non-significant, influence on actual academic performance.
CHAPTER 5

DISCUSSION

This study had three objectives: 1) to create a scale to measure student athletes' academic and athletic motivation, 2) to use the scale to determine whether there were differences in academic motivation, athletic motivation, and ACT score as a function of gender and profile of sport, and 3) to use the scale to assess the degree to which motivation predicts future academic performance above and beyond pre-college academic aptitude.

Regarding the first objective, the constructed scale, called the SAMSQA, was found to have an underlying structure that was interpretable. Although it was hypothesized that the scale would yield two factors, there were actually three: academic motivation (AM), career athletic motivation (CAM), and student athletic motivation (SAM). Surprisingly, the athletic motivation scale split into two separate sub-scales that measured two unique aspects of the construct. The career athletic motivation
subscale was unique because it measured the specific intention or desire to play at an elite or professional level. On the other hand, the student athletic motivation subscale measured a general desire to excel in sports, but not necessarily the intention to pursue sports as a career. The academic motivation subscale measured the extent to which student athletes desired to excel academically.

The original scale consisted of a total of 30 items; however, three items were eliminated due to low factor loadings as well as low item-to-total correlations. Therefore, the final scale consisted of 27 items. The items that loaded on each subscale were consistent in measuring each type of motivation, respectively. The Cronbach's alpha values were high for each subscale.

The interpretability of and acceptable model fit for the SAMS AQ suggests that cognitive motivation theories, such as expectancy-value, self-efficacy, and attribution, are useful in measuring academic and athletic motivation. Given the emergence of an unexpected factor, career athletic motivation, goal orientation theory should be explored to add insight to the theoretical framework. The basic principles and assumptions of goal orientation theory
could also be used to create more items to measure career athletic motivation.

Only one previous measure of academic and athletic motivation was identified in the literature (Snyder, 1996); however, the scale did not have a theoretical framework. Further, the measure consisted of a set of scenarios for which the participants chose a response that was either more academic or more athletic in nature. Unfortunately, the author did not provide any indication of the reliability or validity of this measure.

The scales used by Simons, et. al (1999) did have a theoretical foundation, but only measured academic motivation based on attribution, self-worth, and goal orientation theories. The SAMSQ is unique because it is one of few reliable measures of academic and athletic motivation using an expectancy-value framework to date.

The second objective involved an examination of differences in motivation and ACT scores based on gender and profile of sport. The results of the analyses of variance indicated an interaction effect of gender and profile of sport on ACT score. A main effect of gender was present on all three sub-scales, as well as a main effect of profile of sport on the career athletic motivation sub-
scale. No interaction effects of gender and profile of sport were present on any of the three motivation sub-scales.

Low profile male athletes were found to have the highest ACT scores, followed by low profile females, high profile females, and high profile males, respectively. However, female athletes were found to have higher academic motivation than male athletes. The shift in scores between males and females on ACT score and academic motivation is intriguing. Although low profile males had the highest ACT scores of all groups, they had the lowest academic motivation scores of all groups.

According to the most recent graduation report published by the NCAA, females tend to graduate at higher rates than male athletes ("Graduation Rates," 2001). Generally speaking, female athletes are typically more likely to excel in academics compared to male athletes. An explanation for this finding might be that the opportunities and the pressures traditionally associated with competing in sports for males are not present for females. This seems to be the case despite increasing professionalism of female sports today.
Simons and colleagues (1999) suggest that female athletes are more success-oriented than male athletes. The authors also suggest that females are less likely to be motivated by the extrinsic rewards associated with male revenue sports and have fewer opportunities to play at the professional level. For female athletes, participation in college sports has also been found to have a positive impact on degree attainment (Ryan, 1989).

It was expected that high profile athletes would have lower academic motivation than low profile athletes; however, this was not found to be the case (i.e., there was not a significant difference in academic motivation between high and low profile athletes). Participation in a high profile sport is, therefore, not necessarily linked to lower academic motivation.

A main effect of gender was obtained on the student athletic motivation sub-scale. Male athletes had higher student athletic motivation scores than female athletes. In other words, male athletes were more motivated to excel in sports than females. There was also a main effect of gender and profile of sport on the career athletic motivation sub-scale. However, the results of the analysis of variance for career athletic motivation must be
considered with caution because of limitations discussed in the previous chapter.

It is not surprising that male athletes scored higher than female athletes on both the student athletic motivation and career athletic motivation sub-scales. Previous research has found that male athletes have higher aspirations to play at the professional level compared to females (Blann, 1985). As stated earlier, females are more likely to be motivated toward degree attainment than males (Ryan, 1989).

A main effect of profile of sport on the career athletic motivation sub-scale was also obtained in this study. High profile athletes had higher aspirations than low profile athletes to compete on the professional level. The opportunities to play at the professional level are not as great for low profile sports; therefore, athletes who participate in these sports have very little desire, if any, to play beyond the college level.

The overwhelming majority of minority athletes in this study participated in high profile sports. Research has found that student athletes who participate in high profile or revenue producing sports are more likely to exhibit unrealistic expectations to play at an elite or
professional level (Kennedy & Dimmick, 1987). Previous research also suggests that Black male athletes have higher professional sports career aspirations than their White peers (Sailes, 1996).

The third objective of this study was to assess the degree to which motivation predicted future academic performance above and beyond that of pre-college academic aptitude. The results indicated that ACT score accounted for 15% of the variance explained in actual academic performance. Academic motivation accounted for an additional 10% of the variance explained in actual academic performance. In the overall model, academic motivation and ACT score were the only significant predictors of actual academic performance. Career and student athletic motivation had a negative, but insignificant relationship to actual academic performance.

This finding suggests that high levels of student athletic or career athletic motivation do not detract from academic performance. In other words, student athletes who aspire to excel and/or make it to the professional level in their sport do not necessarily have low academic performance. Contrarily, having low academic motivation,
regardless of athletic motivation, decreases academic performance.

Previous studies support the idea that excessive participation in college sports results in poor academic performance (Lang & Rossi, 1991). Although the results of the current study do not directly support this conclusion, there may be a negative relationship between extreme academic and athletic motivation - as one increases the other decreases. In other words, "more time and energy [devoted] to athletics leaves less time and interest in building academic skills" (Simons, et al., 1999, p. 160).

Directions for Future Research

The findings of this study represent new and important information concerning student athletes' motivation and academic performance. However, the study has room for improvement. Although exploratory factor analysis supported a three-factor model with an acceptable RMSEA value, the model can be improved by obtaining a value closer to zero. Rewording items that were deleted possibly can aid in a better fit of the model to the data.

This study should be replicated at other Division I universities in order to determine if the model is
supported over repeated samples and to establish validity of the scale over time. The study should also be replicated to correct some of the problems that could not be resolved due to the design of the study (i.e., heterogeneity of variance and inability to include high school grade point averages).

In future research, it would be useful to include multiple institutions with random samples drawn from each to increase generalizability and allow for the inclusion of other variables in the study. Other variables might include class rank, scholarship award, and racial/ethnic background, to name a few. The SAMSQA should also be administered to student athletes who participate in Division II and III programs. It would be valuable to examine differences by institutional type. It would also be useful to administer the SAMSQA to student athletes who participate in individual sports to examine differences between individual and team sports.

Future research should also include qualitative analysis to understand in-depth characteristics of student athletes who score high on the three motivational sub-scales. Very few qualitative studies exist that relay the true experiences of student athletes given the complexities
of their roles. Adler and Adler (1991) used qualitative methods to explore and understand academic, athletic, and social roles of college basketball players; however, more work needs to be done in this area in light of the findings from the current study. For example, a sample of student athletes who score high on each of the three scales can be interviewed individually, followed by a focus group dialogue to examine differences and similarities in the responses, characteristics, and experiences of student athletes in each group.

Implications for Research, Theory, and Practice

Several implications for theory, research, and practice can be gathered from the results of this study. First, the results of this study support the development of a contemporary scale (The SAMSAQ) to understand and measure student athletes' motivation toward sports and academics along a continuum. The SAMSAQ has the potential to identify student athletes who have the desire to play sports at an elite or professional level, those who have a balanced level of academic and athletic motivation, as well as those who are more inclined to use their sport as a means to obtain a college degree.
Assessing student athletes’ motivation toward sports and academics early on can help identify student athletes who have less of a balance between academic and athletic tasks. Proactive measures can be taken to help student athletes develop more of a balance between academic and athletic tasks. The results indicated a significant, positive relationship among underclassmen, career athletic motivation, and student athletic motivation. Therefore, freshmen athletes are more likely to be motivationally at risk. Assessment of motivation at various points throughout student athletes matriculation through college can help prevent them from placing too much energy in one role, while neglecting other roles. The goal is for student athletes to excel both in the classroom and in their sport.
APPENDIX A

Data Collection Items

1. Letter to Coaches
2. Post Card Response Card
3. Student Athletes' Motivation toward Sports and Academics Questionnaire (SAMSAQ)
September 4, 2001

Coach John Doe
Jessie Owens Stadium
2450 Fred Taylor Drive
Columbus, OH 43210

Dear Coach Doe,

Hello! My name is Joy Gaston and I am a Doctoral Student and Academic Counselor for student athletes in the Undergraduate Student Academic Services Unit (USAS) at The Ohio State University. The reason for this letter is to solicit your help in conducting a study on student athletes' motivation toward academic and athletic achievement. The purpose of the study is to measure student athletes’ motivation toward their academic and athletic tasks. We hope that in the future athletic and academic administrators can use the results from this study to identify potentially at-risk student athletes, and help them achieve excellence both in the classroom and in their sport.

To make this study a success, we need the assistance of coaches in administering the survey to their varsity players. [The Athletic Director] has granted us permission to conduct this study and to approach coaches for their assistance. The survey takes approximately 10-15 minutes to complete. Further, the study has been reviewed and approved by the Human Subjects Review Board at The Ohio State University. We would like to administer the survey at the beginning or end of a team meeting during the month of October. If you are willing to assist us in this endeavor, please check the appropriate box on the enclosed postcard and return it to Joy Gaston in the pre-addressed envelope by September 21, 2001. Pending your response, we will contact you in the near future to finalize the details of administering the survey. We thank you in advance for your participation and cooperation in completing this study.

Sincerely,

Joy L. Gaston, M.S.
Academic Counselor - Athletes
Undergraduate Student Academic Services

Bruce W. Tuckman, Ph.D.
Professor, Educational Policy & Leadership
Director, Academic Learning Lab

Robert F. Rodgers, Ph.D.
Professor, Educational Policy & Leadership
***Please check one and return in pre-addressed envelope***

___ Yes, I will support my team's participation in this study. I understand that data collection will take place during an academic team meeting to be arranged with SASSO counselors.

___ No, I will not support my team's participation in this study.

Coach's Name _______________________
(print)

Coach's Signature ___________________

(MFB)

Make any additional comments on the reverse side

Figure 1: Post Card Response Card
STUDENT ATHLETES’ MOTIVATION TOWARD SPORTS AND ACADEMICS QUESTIONNAIRE

Figure 2: SAMSQAQ Front Cover Page
Thank you for agreeing to participate in the Student Athletes’ Motivation Toward Sports and Academics Questionnaire. The purpose of this questionnaire is to assess your motivation toward your athletic and academic tasks at this point in time in your career as a student athlete. Your honest responses to the statements in the questionnaire will help us better understand your goals and expectations as a student athlete.

Directions: Read each statement carefully. Indicate the extent to which you agree with each statement by circling one of the coded choices directly across from each statement. Refer to the key below for a description of the codes. Please respond to all of the items on the questionnaire. Also, please complete the demographic information on the last page of the survey. Your responses to items on this survey will be kept confidential. Thank you again for your participation and honesty in completing this survey!

VSD = Very Strongly Disagree
SD = Strongly Disagree
D = Disagree

VSA = Very Strongly Agree
SA = Strongly Agree
A = Agree

Figure 3: SAMSAQ Inside Cover Page
1. I am confident that I can achieve a high grade point average this year (3.0 or above).

2. Achieving a high level of performance in my sport is an important goal for me this year.

3. It is important to me to learn what is taught in my courses.

4. I am willing to put in the time to earn excellent grades in my courses.

5. The most important reason why I am in school is to play my sport.

6. The amount of work required in my courses interferes with my athletic goals.

7. I will be able to use what is taught in my courses in different aspects of my life outside of school.

8. I chose to play my sport because it is something I am interested in as a career.

Figure 4: SAMSQA Page 1
9. I have some doubt about my ability to be a star athlete on my team.

10. I chose (or will choose) my major because it is something I am interested in as a career.

11. Earning a high grade point average (3.0 or above) is not an important goal for me this year.

12. It is important to me to learn the skills and strategies taught by my coaches.

13. It is important for me to do better than other athletes in my sport.

14. The time I spend engaged in my sport is enjoyable to me.

15. It is worth the effort to be an exceptional athlete in my sport.

16. Participation in my sport interferes with my progress towards earning a college degree.

Figure 5: SAMSQAQ Page 2
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>VSD</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>VSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td>I get more satisfaction from earning an &quot;A&quot; in a course toward my major than winning a game in my sport.</td>
<td></td>
<td>VSD</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
<td>VSA</td>
</tr>
<tr>
<td>18.</td>
<td>During the years I compete in my sport, completing a college degree is not a goal for me.</td>
<td></td>
<td>VSD</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
<td>VSA</td>
</tr>
<tr>
<td>19.</td>
<td>I am confident that I can be a star performer on my team this year.</td>
<td></td>
<td>VSD</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
<td>VSA</td>
</tr>
<tr>
<td>20.</td>
<td>My goal is to make it to the professional level or the Olympics in my sport.</td>
<td></td>
<td>VSD</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
<td>VSA</td>
</tr>
<tr>
<td>21.</td>
<td>I have some doubt about my ability to earn high grades in some of my courses.</td>
<td></td>
<td>VSD</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
<td>VSA</td>
</tr>
<tr>
<td>22.</td>
<td>I am confident that I can make it to an elite level in my sport (Professional/Olympics).</td>
<td></td>
<td>VSD</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
<td>VSA</td>
</tr>
</tbody>
</table>

Figure 6: SAMSAQ Page 3
23. I am confident that I can earn a college degree.

24. I will be able to use the skills I learn in my sport in other areas of my life outside of sports.

25. I get more satisfaction from winning a game in my sport than from getting an “A” in a course toward my major.

26. It is not important for me to perform better than other students in my courses.

27. I am willing to put in the time to be outstanding in my sport.

28. The content of most of my courses is interesting to me.

29. The most important reason why I am in school is to earn a degree.

30. It is not worth the effort to earn excellent grades in my courses.

Figure 7: SAMSAQ Page 4
Demographic Information

1. What varsity sport do you participate in at Ohio State? (the one you referred to in this questionnaire?)

2. What is your gender/sex? (check one) ___ male ___ female

3. Are you on an athletic scholarship? (check one) ___ Yes ___ No
   If yes, is your athletic scholarship... (check one) ___ full ___ partial
   Are you "red-shirting" this year? (check one) ___ Yes ___ No

4. Highest level of education completed for: (check one)
   Mother:
   ___ some high school
   ___ high school
   ___ some college
   ___ college
   ___ graduate school
   Father:
   ___ some high school
   ___ high school
   ___ some college
   ___ college
   ___ graduate school

5. Race/Ethnicity (check one)
   Black/African American ___ American Indian
   ___ White/Caucasian ___ Hispanic
   ___ Asian/Pacific Islander ___ Other: (specify) ___

6. Date of Birth: Month ___ Day ___ Year ___

Figure 8: SAMSQA Page 5 - Demographic Section
APPENDIX B

Histograms of Continuous Variables

1. Histogram of ACT scores
2. Histogram of CAM scores
3. Histogram of SAM scores
4. Histogram of AM scores
5. Histogram of AVG GPA
Figure 9: Histogram of ACT scores
Figure 10: Histogram of Career Athletic Motivation Scores
Figure 11: Histogram of Student Athletic Motivation Scores
Figure 12: Histogram of Academic Motivation scores
Histogram of AVG GPA

Std. Dev = .72
Mean = 2.72
N = 226.00

AVGGPA1

Figure 13: Histogram of College Grade Point Averages
APPENDIX C

Estimated Marginal Mean Plots by Gender and Profile

1. Interaction Plot of SAM score
2. Interaction Plot of CAM score
3. Interaction Plot of AM score
4. Interaction Plot of ACT score
Figure 14: Interaction Plot of Mean SAM Score by Gender and Profile of Sport
Estimated Marginal Means of CAMSCORE

![Graph showing estimated marginal means of CAMSCORE by gender.](image)

**PROFILE**

Figure 15: Interaction Plot of Mean CAM Score by Gender and Profile of Sport
Figure 16: Interaction Plot of Mean AM Score by Gender and Profile of Sport
Figure 17: Interaction Plot of Mean ACT Score by Gender and Profile of Sport
APPENDIX D

Scree Plot of Eigenvalues
Figure 18: Scree Plot of Eigenvalues.
LIST OF REFERENCES


Lederman, D. (1992, July 8). Black athletes graduate at higher rate than other blacks, NCAA reports: Study is


