

A SELF-DETERMINATION THEORY MODEL INVESTIGATING THE RELATIONSHIP
BETWEEN HIGH SCHOOL MALE STUDENT-ATHLETE MOTIVATION AND ACADEMIC
ACHIEVEMENT

by

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Liberty University

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Of the Requirements for the Degree

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ABSTRACT

This non-experimental regression study examined the relationship between six motivational factors and academic performance for male high school student-athletes. Research has shown motivation in athletics can have an effect on academic achievement. The study was conducted at six public high schools in the northeast region of South Carolina. The revised Sport Motivation Scale (SMS-II) was the survey instrument used to collect athletic motivational levels of the 10th-12th grade high school male student-athletes ($n=140$). Academic achievement was measured through overall student grade point average (GPA). Sport type and grade level were statistically controlled in this study making them covariates. The data was analyzed by performing a hierarchical multiple regression. Descriptive data was reported and the strength of relationships determined and discussed. The analysis showed the strength of the relationships between the predictor variables (intrinsic, integrated, identified, extrinsic, and non-regulation) and the criterion variable (GPA). The results of the study suggested that overall motivation did not have a statistically significant contribution to GPA. Despite the fact that the overall model was not significant, there were some findings that suggested student-athletes with strong amotivational tendencies may be less likely to be motivated to achieve high academic scores. Future research is still needed in this area and should focus investigating family structure and socio-economic status among participants and ensuring sufficient and more equal representation amongst all sports involved.

Keywords: motivation, academic achievement, student-athlete, Self Determination Theory

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List of Abbreviations

1.1 Grade Point Average (GPA)

1.2 Revised Sport Motivation Scale (SMS-II)

1.3 Self-Determination Theory (SDT)

1.4 Sport Motivation Scale (SMS)

CHAPTER ONE: INTRODUCTION

Over the past decade, academic achievement of student-athletes has become a topic of great debate and interest in the culture of athletics. The National Collegiate Athletic Association (NCAA) is the largest governing body of college athletics and states that the "well-being of student-athletes and equipping them with the skills to succeed on the playing field, in the classroom and throughout life" is one of their primary goals (NCAA, 2014b, para. 1). High school student-athletes continue to be motivated to attend a college for athletic purposes, leading many to conclude athletes are more concerned about athletic endeavors than their academics. The focus of the NCAA has come under scrutiny, as of late as many seem to agree that the NCAA has developed a corporate system and economic focused culture (Elitzen & Sage, 2009; Knight Commission, 2010). Yet, this focus on collegiate athletics has failed to provide research and commitment to high school student-athletes who feed the collegiate system each year through academic and athletic talent.

Athletic participation has become a significant economic booster for businesses as well as educational institutions across the country. High schools and colleges are pushing limits to have success on the athletic court or field. Athletic success translates into large amounts of money generated for athletic programs at all levels (Gehring, 2001; Stuart, 2012). Through the enhancement and expansion of media such as the internet and social media, cell phones, and seemingly constant attention, athletes from the professional level to youth sports are constantly under scrutiny and in the public eye, and are perhaps unfairly pushed into an arena where success in athletics takes precedence over all other aspects of life, which includes the area of academic achievement and success in the classroom (Burnett, Dilley-Knoles, & Peak, 2009). This pressure

to win and the potential for monetary gain is present for both institutions and athletes. It affects administrators, student-athletes, coaches, and other support staff.

However, success of student-athletes in the classroom seems to be secondary to their success in the athletic arena (Gaston-Gayles & Hu, 2009). Student-athletes are not always able to balance the pressures of athletics and academics successfully. Many athletes struggle academically in high school, and without superior athletic ability, they will fail to be awarded an athletic scholarship, and ultimately may not attend college altogether (Collins, 2011); however, some with athletic ability are fortunate to be recruited despite their sometimes poor academic abilities and preparation. According to Collins (2011), many students realize too late that they have met athletic requirements for a scholarship but have failed to meet the academic portion. If athletes have poor academic skills and study habits in high school, they are unlikely to be any better in college. Athletic demands in college are higher than in high school (Pellier, Laden, & Matranga, 1999; Wolverton, 2008). The balance of time is greatly enhanced in intercollegiate athletics because of the pressure to win and the commercialism in the athletic arena.

These things considered, the importance of motivation as a predictor to student-athlete achievement in high school cannot be understated. Research indicates middle school through high school age students are still developing their primary means of motivation, particularly in terms of academic motivation and high academic achievement (Francis et al., 2004; Steinmayr & Spinath, 2009). The school environment, including their time spent in extracurricular activities, along with the student-athlete's personal motivational type, is very important to the development of academic pursuits (Oriahi, 2009). Therefore, the purpose of this study was to build a model to assist teachers, counselors, and other support staff in their endeavors to improve the academic performance of male student-athletes. This model will focus on male high school student-

athletes and how their academic achievement relates to their athletic motivation. Knowing a student's motivation in the classroom will enhance the ability of the teachers and support staff and potentially allow the student to experience a higher degree of success in the classroom.

In order to adequately provide information about the nature of this problem, Chapter One will provide background information through the use of empirical literature which will support the need, the purpose, and significance of the study. Further, the research questions and hypotheses will be stated along with the general identification of variables and definitions. The chapter will conclude with a summary and various assumptions and limitations facing this research design and study.

Background

During the economic downturn, many school districts either turned to capitalizing on athletic success to assist with budget concerns or to cutting sports altogether (Deford, 2011). While most would not dispute the positive influence and character education the athletic arena can provide to student-athletes (Trudeau & Shephard, 2008), the concern is that the pressure to win athletically is higher than the pressure to succeed in the classroom. The motivation towards commercialism in sports has shifted and emphasis has been placed on the athlete rather than the student-athlete. Perhaps the media and its audience and fan base have put unfair pressure on the high profile sports of basketball and football, particularly the male student-athletes in this group.

Some believe that higher athletic pressures placed on student-athletes cause academic scores and achievement to suffer (Ayers, Pazmino-Cevallos, & Dohose, 2012; Lindo, Swensen, & Waddel, 2012), particularly within the male student-athlete population. There is even evidence surrounding intercollegiate athletic recruiting strategies that has shown athletic ability trumps academic abilities (Pitts & Rezek, 2012; Tsitsos & Nixon, 2012); thus, coaches and

administrators of higher education institutions will often compromise academic success and the high educational standards of their institution (Beem, 2006; Gehring, 2004a). While recent research has focused on college academics and athletics (Gregory, 2013), high school institutions seem to remain in the shadows. Varsity athletics in high school produce talented young men who are the next generation of athletes at the collegiate level. Yet there is a question about their motivation for academics, leading to questions about success at the higher education level.

Athletes may be motivated by something that causes them to place more emphasis on athletic success than on academic success, which has led to conflicting reports that show extracurricular activities such as sports do not hinder GPA (Silliker & Quirk, 1997), while others suggest otherwise (Burnett et al., 2010; McMillen 1991). Undoubtedly, athletics are a benefit both to the school and to the student-athlete. High schools and students are able to see when a balance between athletics and academics is achieved, and when proper support systems are in place, students attain positive self-image and self-confidence while alcohol, substance abuse, and dropout rates are lowered (Jones, 2007; Reid, 2005). Schools and support staff utilize motivational principles every day in their institutions. Ryan and Deci (2000b) emphasized the significance of motivation and its influential characteristics, particularly speaking to individuals who have contact with the student. They stated, “[O]f preeminent concern are those in roles such as manager, teacher, religious leader, coach, health care provider, and parent as they mobilize others to act” (p. 69). Action from individuals of influence over student-athletes is required to initiate change. There is a need to clarify what motivates student-athletes to succeed in the classroom, as they are generally motivated in the area of sports and athletics. Finding the proper motivation assists these individuals in attaining excellent results.

Motivation certainly influences students to perform specific tasks and take part in activities. However, while there is research regarding athletic motivation (Woodruff & Schallert, 2008) and academic motivation (Vansteenkiste, Lens, & Deci, 2006; Guiffreda et al., 2013), little is known about the sub-constructs of motivation and what specific types motivate student-athletes the most academically. Evidence has shown that student-athletes have difficulty transitioning from high school academics and sport demands to the collegiate level (Beck & Davidson, 2001; Bigger, 2005). If a model of academic motivation can be created to assist high school administrators, teachers, and coaches in knowing how to motivate students, perhaps early study habits and motivational changes can occur prior to this transition.

Intrinsic motivators are long lasting and self-sustaining, which can be good, as students and student-athletes can develop their own interests and sources for motivation. However, this type of motivation is time intensive for teachers and support staff, as they must learn a variety of intricate techniques to improve their student's success. Extrinsic motivation, on the other hand, is considerably easier to manage from the perspective of the support staff and teachers as it can be very simple. Caution should be exercised, as this motivation is simple and relatively easy to control, yet its timeframe is considerably smaller than intrinsic motivation. Consider the experiment by Deci (1972), where two groups piece puzzles together. One group was compensated monetarily to put them together, while the other was not. The group who was not paid continued to piece together the puzzles after the experiment was over, as they were intrinsically interested in the puzzles while the compensated group was not. Intrinsic and extrinsic motivations are the major components of the Self Determination Theory. Teachers must know their students and student-athletes. They can be motivated differently and could have drastically different outcomes in the classroom.

It is unknown whether a student-athlete's motivation to their sport is connected to his or her academic motivation. Student-athletes typically enjoy the sport they participate in, resulting in more intrinsic motivation. This is not always the case, however. Ryan (1995) suggests that every human has a "propensity" to learn and increase their knowledge within the educational realm (p.398). Student-athletes are no exception. Educational institutions, through the process of self-improvement, have changed their methodology and pedagogical techniques as they work with students; however, this has seemingly caused the learning to be a chore for some rather than an activity of enjoyment or satisfaction (Ryan & Deci, 2009). This change has affected the motivational make-up of the student-athlete and causes confusion for those working with student-athletes of how to best meet their needs.

The Self Determination Theory (SDT) developed by Deci and Ryan in the 1980s suggests that everyone has some form of motivation. Individuals are motivated either intrinsically from within by a sense of pride, values, or care or externally through rewards, grades, opinions and others (Deci & Ryan, 1985b; Ryan & Deci, 2000b). While motivation is a choice, certainly intrinsic and extrinsic motivators contribute to both academic and athletic success. There are several components to SDT that apply to student-athletes in this particular situation. According to Deci and Vansteenkiste (2006) competence, relatedness, and autonomy are the central tenets of SDT, and are the three universal needs everyone requires to function at their optimal potential. Autonomy is the ability to make decisions and understand outcomes and consequences of those decisions. Competence is the ability to master one's own environment, while relatedness is the desire to be connected and experience others. These three universal needs are especially present in athletes (Vansteenkiste et al., 2006). According to SDT constructs, a failure to assess and maintain these specific elements with a student-athlete could potentially lead to poor

performance in the athletic arena as well as the academic environment (Deci & Vansteenkiste, 2006).

Once the three basic and universal needs are met, SDT suggests individuals will by nature internalize and incorporate their specific motivational regulation, whether it is more intrinsically related or extrinsically related. Motivation can be different for each person and may adapt and change over time depending on circumstances affecting the student at the time. If individuals have a high degree of autonomy, competence, and relatedness, they are more likely to have high motivation. On one end, according to Deci and Ryan (2002), there is amotivation, which is also a form of non-regulation or minimal desire to act. At the other end of the scale is intrinsic motivation, which is the highest and most powerful form of self-determined motivation. The other types of extrinsic motivators making up the middle of the scale, in order from least to most self-determined are: external, introjected, identified, and integrated regulations (Deci & Ryan, 2000; Pelletier et al., 2013). According to SDT, “Individuals are inherently motivated to integrate within themselves the regulation of extrinsically motivated activities that are useful for effective functioning in the social world” (Pelletier et al., 2001, p. 280). This might make one think individuals are only externally motivated; however, the concept also applies to intrinsic motivation and regulation. The six motivational factors are either intrinsically or extrinsically related within the SDT framework.

Student-athletes, due to their inherent psychological profile, will seek out athletics to fulfill their needs (Mallett & Hanrahan, 2004; Steinfeldt & Steinfeldt, 2010). The needs of autonomy, relatedness, and competence can be specifically applied to athletic participation. Competence is seen as practice in mastery of their specific sport. Relatedness can be demonstrated by the significant teamwork associated with athletics. Team sports allow

relatedness to thrive. Autonomy is what drives an athlete to participate in the sport. Often likability to the sport and desire to participate drives this component. Student-athletes will persist with activities where they find success (Guffrida et al., 2013). Student-athletes are often characterized by having confidence, dedication, enthusiasm, and vigor in their sport experience (Hodge, Kozub, Dixon, Moore, & Kambon, 2008). Success and interest increases student-athlete motivation. While focus is placed on optimizing student-athlete success athletically, the demonstrated success comes at a cost. Student-athletes invest an extraordinary amount of time and effort into developing their skills in the athletic arena and therefore have fewer hours to spend preparing for classroom academics (Wolverton, 2008; Ayers et al., 2012). As student-athletes develop their motivation for athletics, similar motivation should also be found in their academics, although it may not take the same form.

The support team is essential in providing critical motivational guidance (Balduf, 2009; Bigger, 2005; Le, Cassillas, Robbins, & Langley, 2005). With proper support systems, educators and administrators can ensure academics are one of the activities that motivate an individual to succeed resulting in increased intrinsic motivation over time. Balance in managing student-athlete's schedules and priorities is essential (Macan et al., 1990). This model could be applied in classrooms and athletics. Teachers can use new pedagogical techniques designed to allow students to achieve autonomy in course assignments or coaches can promote competence in a specific area of practice allowing student-athletes to succeed. The more autonomous (intrinsic) the motivation, the higher the likelihood a student is to engage in significant study effort (Kusurkar, Ten Cate, Vos, Websters, & Croiset, 2012). Students tend to find cognitive structures such as classroom learning to be challenging. Athletes use a challenge on the athletic field or court and either rise or fall under the situation. Student-athletes are not all that different. When

they experience success on the athletic field, they may be more likely to engage and give an increased effort. Student-athletes need to see success in the classroom in order to increase their motivation for higher levels of engagement in the classroom (Darner, 2009). While both academics and athletics are important, both must be emphasized together. Ultimately an increase in the academic culture of athletics will result in students who are more prepared to enter the college environment and succeed in that environment.

Problem Statement

Research has indicated first year student-athletes in intercollegiate sports, are not prepared academically (diNovi, 2011; Winters & Gurney, 2012). While some controversy remains regarding males and females and academic success (Ayers et al., 2012), research has demonstrated that male athletes are more likely to have academic difficulties than females (Emerson, Brooks, & McKenzie, 2009; Burnett et al., 2010). Therefore, further research is needed on what specific motivational factors can predict male student-athletes academic achievement. The total number of high school athletes is continually rising. There are nearly 4.5 million male high school student-athletes, and 3.2 million female student-athletes (National Federation of State High School Associations, 2013).

Many school systems use extrinsic motivation to increase academic achievement. This comes in the form of academic eligibility. Focusing on eligibility creates a sub-standard expectation and reduces high academic development for student-athletes (Mahiri & Van Rheenen, 2010; Comeaux & Harrison, 2011). Motivation to succeed in college seems to be pre-determined by characteristics put in motion before the student-athlete ever sets foot on a college campus. It has been noted in research that precollege characteristics of family background, educational experiences, and individual characteristics exist to mold and shape the student-

athlete as they transition from high school to college (Astin, 1993; Sellers, 1989; Sellers, 1992). These individual attributes or characteristics include academic motivation (Gaston-Gayles, 2004). Some suggest there are alternative forms of motivation or characteristics that will determine academic success in college (Comeaux & Harrison, 2011). Family background, an athlete's socioeconomic status, and the sport they participate in, personal goals, and also their gender seem to contribute differently to their chances of academic success (Burnett et al., 2010; Simons, Van Rheenen, & Covington, 1999). By determining an effective motivational model that uses multiple forms of motivation, administrators and educators can adequately aid students to be as successful in their academic endeavors as they are in athletics.

The high profile sports of football and basketball receive the most attention at the college level, primarily due to an economic factor. These two sports are perhaps the largest example of athlete exploitation among college athletics. According to Dubner (2013), the NCAA's 2013 National Championship basketball tournament had its highest television ratings in the past 18 years and collected over \$1 billion dollars in revenue from advertising alone. Trying to keep high school student-athletes motivated to focus on their academics while the rest of society sees the commercialization of college athletics has posed a significant threat to the atmosphere of high school sports and academics. According to Gehring (2001), "High school sports can reflect the worst of their collegiate counterparts" (p.16). This was in reference to the poor academic standards placed on college students and the commercialization of the sport. The lack of motivation from high school carries over to the college atmosphere. There is no motivation to succeed academically when standards at the collegiate level are so disjointed and loose (Winters & Gurney, 2012). Not enough attention has been placed on high school male basketball and football student-athlete academics which suffer similar standards. Palaima (2011) indicates

student-athletes should be placed at institutions best suited for their academic preparation rather than their athletic preparation. He states, "Most of them need to be disabused of the dream that they will 'go pro'" (p.1). There are roughly 400,000 athletes who are part of the NCAA, and more than 99% of these athletes will graduate from college and live their lives outside of professional athletics. Motivation to succeed in the high school classroom is of imperative importance in order for the next generation of individuals to become contributing members of society.

Purpose Statement

The purpose of this quantitative predictive correlational study was to create a model based on SDT that uses motivational factors of male high school student athletes to predict academic achievement while controlling for gender and athletic status (i.e. varsity athletic level). Only male student-athletes were examined in this study, and athlete status was limited to varsity athletes only. Sport type and grade level were statistically controlled making them covariates. Participants were limited from 10th through 12th grade student-athletes who are involved in one or both of the sports of basketball and football. The choice to exclude females from the study is conclusive in research. Female student-athletes are consistently shown to have higher academic performance than their male counter parts, both in high school and college (Burnett et al., 2010; Fortin, Oreopoulos, & Phipps, 2012; Zembar, 2011). Athletic status is monitored to limit the variation in high school sports competition level. Excluding junior varsity and freshmen teams will keep competition levels relatively even. Further, from a college admissions and recruiting standpoint, in general, student-athletes who are not on a varsity team are not viewed as elite in terms of their athletic activity and ability (Eiges-Hansen, 2014). The NCAA labels men's basketball and football as two of their "high profile" sports which could use improvement in their

academics (NCAA, 2011, para. 2). Increasing awareness regarding the academic side of these sports, particularly in high school would seemingly be wise.

Student-athletes from six public high schools in three counties within the state of South Carolina were asked to participate. Predictor variables of intrinsic, integrated, identified, introjected, external, and non-regulated motivation will presumably relate to the criterion variable of academic achievement. The predictor variables of external, introjected, identified, and integrated regulations are all extrinsic, whereas intrinsic is an internal form, and non-regulation is a lack of motivation. Through the use of the revised Sport Motivation Scale (SMS-II), male student-athlete motivation was measured. The criterion variable of academic achievement will generally be defined as overall GPA based on the South Carolina uniform grading scale.

Research on SDT is clear that athletes can be motivated either intrinsically or extrinsically (Deci & Ryan 1985b, 2002). However, little is known about the links between these motivational factors and predicting academic achievement in male high school student-athletes. The theory utilized in this study, SDT, was developed by Deci and Ryan (2002). It is a motivational theory that bases itself on motivational tendencies of humans, particularly their intrinsic tendencies to behave in healthy and highly functional ways (Deci & Ryan, 2002). Motivation is applied in many areas of life as individuals are enabled to move and act. In this case, school support staff, coaches, and student-athletes are all affected by motivation. Student-athletes are often motivated by extrinsic factors. Intrinsic motivators on the other hand, are just as common. SDT posits that there is a connection between intrinsic and extrinsic forces and how they present themselves in humans (Deci & Ryan, 1985b). In the case of student-athletes, there would seem to be a relationship between their motivation to succeed not only athletically, but

also academically. The theory would expect the motivational predictor variables to influence the extent of the criterion variable of GPA. According to SDT, in general, if a student athlete shows high autonomous motivation to succeed athletically, they would also have a high level of academic achievement. Communication with the primary theorist revealed that student-athletes are a group of individuals who require support from parents, coaches, and teachers (R. Ryan, personal communication, April 13, 2013). A motivational model can assist these support staff to help athletes achieve not only athletic success, but academic success as well.

Significance of the Study

Effectively creating a model for academic and classroom success is vital for student-athletes. Through athletics, individuals learn and develop motivational characteristics that can benefit and turn them into next generation leaders (Arbogast, 2011, Lumpkin & Stokowski, 2011); however, athletics alone cannot do this. Lamanna (2008) indicates that an “academic game plan” (p.60) must be developed for any program or individual to be successful. This type of program should include the most ideal methods and techniques to teach and interact with athletes through their ideal motivation. Goals and achievement can be attained through utilizing these techniques, while using wrong motivational techniques for a student-athlete could be counterproductive and have a detrimental outcome on academic achievement and performance (Iachini, Ambrose, & Anderson-Butcher, 2010; Rawsthorne & Elliot, 1999), further continuing and complicating the problem.

Significant lessons can be learned from this model. Student affairs leaders such as teachers, coaches, counselors, and other support services have a direct impact on student-athletes. These individuals can understand how an individual is motivated to assist those working directly with the athletes in cultural differences, academic challenges, and further build

their responsiveness to intervention strategies while ultimately making them better students and athletes (Comeaux & Harrison, 2011; Iachini et al., 2010). Deliberate motivational strategies and direct engagement could have a distinct impact on the lives of student-athletes, empowering them to become more academically motivated and seek further opportunities to develop both in the classroom and in the athletic arena, particularly through the development of autonomy, relatedness, and competence (Pelletier et al., 2001; Vansteenkiste et al., 2010; Wormington, Corpus, & Anderson, 2012).

Research Questions

The research questions for this study are:

RQ1: Will the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation predict academic achievement of male student-athletes, while controlling for demographic (i.e. grade) and athletic variables (i.e. sport type)?

RQ1a: Will there be a statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement?

RQ1b: Will there be a statistically significant contribution from grade to the model for predicting male student-athlete academic achievement?

RQ1c: Will there be a statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement?

RQ1d: Will there be a statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement?

RQ1e: Will there be a statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement?

RQ1f: Will there be a statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement?

RQ1g: Will there be a statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement?

RQ1h: Will there be a statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement?

Hypotheses

The following are the research hypotheses:

H₁: There will be a statistically significant relationship between the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation and the academic achievement of male student-athletes while controlling for demographic (i.e. grade) and athletic variables (i.e. athletic sport type).

H_{1a}: There will be a statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement.

H_{1b}: There will be a statistically significant contribution from grade to the model for predicting male student-athlete academic achievement.

H_{1c}: There will be a statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement.

H_{1d}: There will be a statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement.

H_{1e}: There will be a statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement.

H_{1f}: There will be a statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement.

H_{1g}: There will be a statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement.

H_{1h}: There will be a statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement.

Alternatively, the following are the null hypotheses:

H_{0i}: There will be no statistically significant relationship between the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation and the academic achievement of male student-athletes while controlling for demographic (i.e. grade) and athletic variables (i.e. sport type).

H_{01a}: There will be no statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement.

H_{01b}: There will be no statistically significant contribution from grade to the model for predicting male student-athlete academic achievement.

H_{01c}: There will be no statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement.

H_{01d}: There will be no statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement.

H_{01e}: There will be no statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement.

H_{01f}: There will be no statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement.

H_{01g}: There will be no statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement.

H_{01h}: There will be no statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement.

Identification of Variables

The predictor variables in this study are six motivational factors of regulation. External regulation is a form of extrinsic motivation where people are controlled by external contingencies such as rewards or punishment (Deci & Ryan, 2000; Deci & Ryan, 2002). Introjection is an internalization of individuals taking on behaviors, attitudes, or making decisions not because they want to, but because of the guilt or pressure they feel if they do not do it (Deci & Ryan, 2000; Deci & Ryan, 2002; Ryan & Deci, 2000a). Identification is the process by which an individual identifies a value or behavior and makes that behavior habitual or autonomous (Deci & Ryan, 2000; Deci & Ryan, 2002). Integration has the most internalization in extrinsic motivation. It involves identifying behaviors, and integrating those patterns into life. These patterns are usually in line with personal values or beliefs (Deci & Ryan, 2000). Intrinsic regulation encourages full autonomy and is present when an individual performs an activity simply because of internal interest or pride (Deci & Ryan, 2000; Deci & Ryan, 2002). Amotivation or non-regulation is a minimal desire to act (Ryan & Deci, 2000a). Variables are listed in Table 1.1. Each of these factors was measured through the use of the Sport Motivation

Scale (SMS-II) developed by Pelletier and colleagues (2013). The SMS-II is a revised version of the original scale and will give insight to the psychological motivational factors that influence student-athletes (Pelletier et al., 2013). Researchers also suggested there is substantial evidence showing that the scores on the SMS have strong predictive relationships with theoretically related constructs (Pelletier et al., 2007). Therefore, the SMS-II survey was used to draw a potential correlation between academic achievement and academic motivation while following the theoretical construct of SDT.

Table 1.1

Variables in this research study

Predictor	Criterion	Covariates
Extrinsic Regulation Introjection Identification Integration Intrinsic Regulation Non-Regulation (Amotivation)	Academic Achievement measured through GPA	Grade Sport Type

In addition to the six predictor variables, the criterion variable of academic achievement, measured by GPA, will generally be defined as the overall GPA for each individual. This variable is measured by the South Carolina uniform grading scale and converted to a 4.0 scale (South Carolina Department of Education, 2012). Grade point average has long been used as a research tool to assess academic achievement in students. It is perhaps one of the most studied variables in educational and psychological research (Kuncel, Crede, & Thomas, 2005).

There are several other variables in this study. Athletic status was controlled and only male varsity level athletes were used. Only varsity athletes were studied as they had a higher talent and may be considered more elite than the other levels of competition. According to

Ingersoll (2009), the definition of an elite athlete is “fuzzy” (p. 453). However, he indicated the definition can be used at multiple levels of sport if an individual is in fact elite or superior in their area. Elite is generally defined in this case as having superior athletic ability. While this study is investigating the broader concept of male student-athletes, there may be many elite athletes on each roster.

Sport type, which is one of two covariates in this study will generally defined as the type of sport the athlete can participate in. Only football and basketball were acceptable sports for this particular study. These sports were selected specifically, as Pelletier and colleagues (2013) suggested future studies use a variety of sports when investigating motivation using the SMS-II. They did not investigate these sports. Grade is the second covariate. The study participants were limited to grades 10 through 12. A male student-athlete who is enrolled at one of the target high schools, has enough credits to be considered a high school student (grade 10-12), participates in basketball or football, and is on a varsity sport roster was considered a student-athlete in this study.

Definitions

For the purposes of this study, the following terms are operationally defined as follows:

Motivation: To have desire or to be moved to do something (Ryan & Deci, 2000a).

Intrinsic Motivation: “Refers to doing something because it is inherently interesting or enjoyable” (Ryan & Deci, 2000a, p. 55).

Extrinsic Motivation: “Refers to doing something because it leads to a separable outcome” (Ryan & Deci, 2000a, p. 55).

Amotivation or non-regulation: “The state of lacking an intention to act” (Ryan & Deci, 2000a, p. 61).

Introjected Regulation: “A type of internal regulation in which a person performs an act in order to enhance or maintain self-esteem and the feeling of worth” (Ryan & Deci, 2000a, p. 62).

Identified Regulation: “A person has identified with the personal importance of a behavior and has accepted its regulation as his or her own” (Ryan & Deci, 2000a, p. 62).

Integrated Regulation: This is the most autonomous form of extrinsic motivation and “occurs when identified regulations have been fully assimilated to the self” (Ryan & Deci, 2000a, p. 62).

Revised Sport Motivation Scale (SMS-II): An 18 question survey designed to measure six forms of self-regulation: Intrinsic, extrinsic, introjected, identified, integrated, and non-regulation or amotivation (Pelletier et al., 2013).

Self Determination Theory: A theory that builds a framework for studying the "dialectic between the active, growth-oriented human organism and social contexts that support or undermine people's attempts to master and integrate their experiences into a coherent sense of self," specifically in the areas of intrinsic and extrinsic motivation (Deci & Ryan, 2002, p. 27).

Research Summary

The nature of this study is quantitative as statistical techniques and procedures were used to determine correlational relationships between identified variables (Rovai, Baker, & Ponton, 2013). There are several advantages to correlational research. The primary advantage is it enables investigators to analyze and determine potential relationships "among a large number of variables in a single study" (Gall, Gall, & Borg, 2007, p. 336), specifically between academic performance and motivation. There are multiple predictor variables, one criterion variable, and several covariates. By nature of the variables, this study qualified for a multiple regression. Specifically in this case, a multiple hierarchical regression was utilized. The scores from one variable could be used to predict scores or performance from the other variable. The

relationships were further derived through a theoretical framework, such as SDT, rather than through the development of such a framework (Creswell, 2013). A researcher must be careful not to assume that correlation between variables equal causation (Campbell, 1963; Gall et al., 2007; Rovai, et al., 2013).

Assumptions

Assumptions

There were a few important assumptions to consider in this research study. First, it was assumed that student-athletes would come from a variety of demographical and socioeconomic backgrounds. Considering the sample and diverseness of the research sites, this was not controlled. High school students in grades 10-12 generally range from 14-19 years of age. Another assumption was in the nature of the theoretical framework and structure of the present study. This study utilized the SDT. It was being assumed that this theory was appropriate for accurately testing student-athlete's motivational levels with their academic achievement. It was also assumed that the predictor and criterion variables were appropriate to the study's intent and fit well within this framework. Variables must be distinctive and appropriate for the nature of the research.

Instrumentation and methodology were two other assumptions. It was assumed that the utilization of the SMS-II was appropriate and best suited for the present research. Considering the fact that the instrument is a survey, it was also assumed respondents would answer accurately and correctly. Concerning the design, the study was correlational in nature and contained more than one predictor variable and a single criterion variable. It was assumed that the most appropriate design analysis was a multiple hierarchical regression. It was also assumed that there would be enough participants in the study. Warner (2013) indicates that a significant number of participants are necessary for a regression analysis in order for the results to provide quality

reasoning. Utilizing the formula $n > 104 + k$, a minimum sample size can be reached. For this study, there had to be a minimum of 110 participants.

Lastly, it was assumed that the results may generalize with high school student-athletes in more locations than South Carolina. While it may not directly apply in other states and locations, given the fact that the quantity of student-athletes anticipated to participate in this study is high, the results could show trends applicable to student-athletes in other geographical locations and situations. It should be noted, however, that while results may indicate a correlation, this does not necessarily mean there is causation (Gall et al., 2007).

Delimitations

Limitations in this study insured proper controls were in place and following analysis could provide potential improvements for future research. The geographic location and demographic is somewhat one-dimensional. The north-central portion of the state of South Carolina is to some extent narrowed in its racial ethnicity. According to the State Department website, the population under study is evenly split 48% for Caucasian and 48% for African American and the other 4% devoted to Asian, Hispanics, and Other. The data was collected from a three county radius from high schools of various sizes to minimize geographical limitations and sample selection bias. Future research focused on other demographics and geographical locations may allow for more generalizability.

School size may be another limitation. Schools range from 739 students in the high school enrollment to nearly 1,730 students. This could certainly have an effect on the athletic talent of the student body population. Naturally, schools with more students will have a larger selection showing a broader scope of athletic talent. This was controlled by only allowing

varsity students to participate in the research study rather than inviting the junior varsity athletes to participate as well. Sport type was also limited to football and basketball.

Also, due to class schedules and the volume of subjects under study, students were allowed to be enrolled in a variety of classes. The study allowed multiple types of classes such as: Advanced Placement, Dual Credit, College Preparatory, International Baccalaureate, and Honors classes. Information was collected to determine how many students take each type of course. However the difficulty of each course could have had an effect on an individual's academic motivation and overall performance in athletics. Studying athletes who are in a particular curriculum or class type could be a potential point for future research.

Omitted variable bias was also considered as a potential threat. This term refers to any independent or predictor variable not included in the research study that might influence the dependent or criterion variable (Hausman & Wise, 1979). To reduce this limitation, variables were thoroughly reviewed with empirical and theoretical literature. Additionally, other research studies and models were considered as the topic of student-athlete motivation and academic achievement continues to expand.

Errors-in-variables bias can be considered a threat to internal validity (Hausman & Wise, 1979). To limit this threat, students viewed their grades on PowerSchool just prior to entering their GPA data into the survey to ensure it was accurate. Also, the collection and data entry should be performed accurately. Student-athletes could also falsely report their responses on the survey, resulting in errors. However, Cassady (2001) indicated a high correlation (.97) from questionnaires to what official records state. Despite this report, student-athletes may not report exact numbers and therefore, care was taken to reduce errors-in-variables bias.

Social desirability bias is also a threat when individuals must report on questions about themselves. Respondents at times change their answer so it appears more socially acceptable (Spector, 2004). This typically only occurs with personally or socially sensitive content, however motivation could be considered such a topic. Individuals may seek approval for their response. In order to limit the potential for social pressure, athletes completed the questions in their own space with distance between each person to ensure a neighboring athlete cannot read or see a response. Anonymity was also preserved as data was limited to the researcher and the research committee.

The issue of non-response is also an important concern with survey collection. When respondents fail to complete surveys or simply skip questions on the survey it can complicate the data and lead to incomplete or poor data (Fowler, 2009; Warner 2013). This was controlled through careful screening when respondents submitted their survey. If a survey was incomplete, the student-athlete was asked if he was finished or simply forgot to answer the missing question. This screening assisted with this threat.

Finally, correlational research is not considered a form of causal-comparative research. This limits the potential of results to be generalizable to a larger population. Perhaps future studies could utilize a different study design such as an experimental design allowing the research to be more cause and affect oriented. Following the research study, more suggestions for design could be made in order to provide effective implications for study and future research.

CHAPTER TWO: REVIEW OF THE LITERATURE

Motivation can be a difficult characteristic to harness in both high school and college students. High school students interested in attending college are typically motivated by a career they wish to pursue following graduation or a specific skill they wish to learn. In the case of student-athletes, they may find motivation to attend college based on their athletic ability. This is different from most traditional students. While a student-athlete may indicate their primary focus is their athletics, it is also common for these athletes to have a dream to earn a college degree. Athletics for some high school athletes will provide the economic means to attend college through a scholarship. For this group, they may wish to showcase their athletic abilities in order to have an opportunity to be drafted by a professional sports team in the future. This group may see college through a different lens and therefore have different motivations for attending college and having any sort of focus on their academic coursework. At a minimum, they would need to be focused on maintaining their academic eligibility in order to maintain their athletic status and likely their scholarship. The formations of these individual student-athlete motivations are molded and shaped in their middle and high school years, particularly as learning structures vary from elementary to middle school and middle school to high school (Meece, Anderman, & Anderman, 2006). According to Guiffrida and colleagues (2013), it is not the prospect of playing on a professional sports team, the money, the affluence, or a career salary after college that motivates athletes to succeed; rather, it is the intrinsic motivation of showing themselves where they can excel.

The blame for a shifting focus cannot solely rest on the student-athlete alone. The high school sports environment has created an atmosphere and culture similar to that of the NCAA. Student-athletes entering the collegiate environment encounter problems and issues such as

fluctuating graduation rates, poor academic performance and preparation, drop outs, academic scandals and others. Academic reforms have been occurring at the collegiate level and the high school level for years. While collegiate sports and academic reform get the attention of the nation due to media exposure, the fact remains that student-athletes in high school have similar struggles and face many of the same issues as their counterparts in college athletics. While Chapter One discussed the background and nature of high school and collegiate athletic motivation, this chapter will focus on what the literature states regarding issues facing both high school and collegiate athletics as they relate to student-athlete motivation in athletics and the academic arena. A brief history of the problem will be reviewed, as well as the literature related to the Self Determination Theory as well as the various measurement scales that have been utilized to measure motivation. A review related to the current research and literature surrounding student-athletes and their motivation will provide insight and depth into a growing national issue.

Academic Challenges in College

While intercollegiate sports have been in existence since the early crew teams at Harvard and Yale, the modern era for the NCAA did not emerge until 1952 despite their existence since 1910 (Falla, 1981). Since then, this governing body has been the mainstay for college athletics at multiple levels and divisions of college sports. Some of the primary purposes of the NCAA as described by their 2013-2014 manual are to establish rules for recruiting, scholarships, institutional eligibility, and academic eligibility. According to the NCAA, they protect the amateurism and uphold standards of integrity within its organization. This includes both athletics and academics. However, over the past 30 years, individuals have fought against the

NCAA, claiming student-athletes are exploited, particularly within the sports of basketball and football (Van Rheenen, 2013).

The culture created by the NCAA has not allowed student-athletes a choice for how they can remain students first while the commercialization of their athletics has become so rampant focusing on athletes first. Schneider (2010) states, "Threats to the moral integrity of sport arise when entering into revenue generating commercial agreements" (p.30). When an entity becomes reliant on funding and revenue, it could cause a potential deviation from an organization's primary goal and mission. One of the goals of the NCAA is to "support learning through sports by integrating athletics and higher education to enrich the college experience of student-athletes" (NCAA, 2014b, para. 2). It is unlikely the commercialization of sports is for a moral reason rather it appears as though its primary purpose is for the generation of increased revenue. In 2010, the NCAA signed a broadcasting agreement worth \$10.8 billion dollars (NCAA, 2010). This was only for the rights to present the Division I Men's Basketball tournament each March. Another example of commercialization in the NCAA is the college football Bowl Championship Series. In the 2012-13 bowl games, every athletic conference made money. The 35 bowl games distributed more than \$300 million to college conferences (Solomon, 2013). Student-athletes seem to be caught in between schools and conferences attempting to generate millions of dollars for their institutions, while they themselves are trying to obtain a solid educational degree.

In order to achieve a high athletic level of participation, student-athletes must practice in order to compete at a high level. As part of these demands, student-athletes in college are regulated by how much time they are allowed to participate in their sport each week. Since 1991, the NCAA has placed restrictions on institutions, limiting the time student-athletes are able to spend in athletic related activities. A lack of appropriate time spent on academic activities can

have a profound limitation on a student-athlete's ability to succeed in the classroom, specifically athletes who spend at least 10 hours in athletic activity (Ayers et al., 2012). Despite this rule, Ayers and colleagues (2012) reported that athletes were engaged in athletic activities over 30 hours each week while in season. This amount of participation makes the academic activities a second priority. Wolverton (2008) reported students felt "owned by the coach" and were unable to choose an academic major they wanted (para. 5). It is no surprise that some student-athletes in college have the stereotype label of a "dumb jock" (Hodge et al., 2008, p. 108) or are involved in scandals such as the recent 2014 scandal at the University of North Carolina, where a faculty member provided research to the institution where she reported nearly 60% of the high profile athletes (basketball and football) from 2004-2012 had reading levels between 4th and 8th grade (Associated Press, 2014). However, despite these issues with literacy in college and continuous focus on athletics, over 400,000 student-athletes are continually motivated to engage and participate in their sport while in higher education. Sports, academics, social, and personal instances all compete for a student-athlete's time. This has an adverse affect on the overall academic motivation for a student-athlete.

NCAA Academic Reform

The educational environment has changed over the last 75 years for collegiate student-athletes. While the standards have progressively been tightened, it has taken significant time. In 1962, student-athletes were required to maintain a 1.6 GPA. This was the first step in the NCAA academic reform (Falla, 1981). In 1973, the NCAA repealed the 1.600 Rule and enacted the 2.000 Rule. Under the new rule, students would be admitted to institutions to play based on a high school GPA of 2.0 (Crowley, 2006). During this time period, commercialization of college athletics began. At the same time, however, graduation rates and concern about the exploitation

of athletes also became an issue. As a result of the public outcry, in 1983 the NCAA made drastic changes to the minimum standards student-athletes were required to meet in order to participate in athletics. Proposition 48 was put into effect in 1986 which mandated high school athletes who wanted to compete at the collegiate level to achieve minimum scores on the SAT or ACT and also have the former stated GPA of at least 2.0. This was the first step in investigating high school athlete's preparation. The intention of this rule was to ensure "student" remained ahead of "athlete" (Falla, 1981; Swift, 1994). Academic reform continued and other propositions in the 1990's, including the currently used sliding scales were enacted. The hope was that if high school student-athletes were motivated enough to excel at the high school level (increasing academic standards); they would be more prepared and ultimately more successful academically in college.

In 2003, the NCAA developed what is now known as Academic Progress Rate (APR). They call this their most comprehensive educational monitoring system (Crowley, 2006). Under this system, institutions are held accountable for the performance of their student-athletes. The APR is calculated by taking the total number of points earned by a team divided by the number of points possible with the cutoff at 925 and the maximum points of 1000 (Meyer, 2005; NCAA, 2005). The APR is the current standard the NCAA utilizes for ensuring academic compliance with institutions. It rewards those who make strides to play by the academic rules, and penalizes those who do not.

At present, high school students must take a specified amount of core courses and achieve a minimum score on the ACT or SAT. Their GPA is also a factor in acceptance. The changing and increasing standard trend will continue in 2016 when the NCAA will raise their standards again. A GPA of 2.3 in NCAA approved core high school courses, along with an

acceptable ACT or SAT score based on their GPA, will allow high school student-athletes to be eligible in their first year of college athletics (NCAA, 2014a). These rules are all established in the NCAA Initial Eligibility Clearinghouse. All student-athletes who desire to play in an NCAA institution must meet these required standards. This form of motivation has been used for decades to try and motivate student-athletes in their academic achievement and behavior. This external motivator is being used to increase academic eligibility of high school student-athletes as they prepare for their first year of college. Motivated high school student-athletes must understand there will be significant demands placed on them from both the classroom and the playing field (Meyer, 2005).

High School Athletics

Just as coaches are always striving to motivate their athletes to play better, coaches, parents, teachers, and other support staff assist each other in motivating their students to succeed in the classroom. Research implies that motivation and drive comes from within oneself (Dahlkoetter, 2007; Guiffrida et al., 2013; Ryan & Deci, 2000b). While this seems simple, humans and particularly student-athletes are not so simple. Many student-athletes have the belief they can utilize their high school sport to obtain a college education. However, according to Peltier and colleagues (1999), this claim must be called into question. There are over one million high school football players and nearly 500,000 basketball players (Gehring, 2004b). Less than 150 of the one million football players will make it to the NFL and approximately 50 of the 500,000 basketball players will be drafted and play in NBA. This means a focus on academics rather than athletics must take precedence.

Blame cannot be placed entirely on the athlete, however. School districts are capitalizing on the athletic environment in very similar ways college institutions do. When new football

stadiums are built with seating for 10,000-20,000 fans and generate more than \$500,000 each season, it becomes difficult to emphasize the academic component (Conn, 2012; Gehring, 2004a). Academics certainly do not generate the amount of revenue that athletics do. Despite this occurrence, many schools highlight education as their priority. The culture created by athletics is very apparent to students and their families. Despite the positive aspects created by athletics (Fejgin, 1994; Sternberg, 2011), not everyone sees the high school athletic culture in a positive light, as it mimics the commercialism and time commitment for student-athletes. Coaches at some institutions consistently place ineligible athletes on teams and allow them to participate. Other coaches blatantly violate rules about practice time (Beem, 2006). Additionally, some states offer school day-credits and special classes for student-athletes. These classes usually entail game film or studying the playbook, or doing team walkthroughs (Conn, 2012). The influence of athletics is so strong that their surrounding environment seems to contribute to student-athlete athletic motivation rather than academic motivation.

Need for High School Athletics

Athletics are not, however, a detriment to society or to a student's school life. There are physical, psychological, and social benefits to participating in high school athletics. According to Kennedy (2008), challenging students athletically is just as important as it is academically. While some institutions have investigated trimming sports from their budgets due to decreasing funding, it could be argued that students who participate in athletics and extracurricular activities have higher academic achievement than those who do not participate. Student-athletes learn significant life lessons that cannot be taught in the classroom.

The literature is very clear about how athletics and extracurricular activities affect a student. Athletics reduce drop-out rates, promote self-esteem, improve student culture, and build

high quality character traits (Fejgin, 1994; Kennedy, 2008). In fact, the National Federation of State High School Associations reported that over seven million athletes participate in high school sports and they see fewer drop-outs, higher grade point averages, better daily attendance, and fewer discipline problems (As cited in Lumpkin & Stokowski, 2011, p. 125; Lumpkin, 2012; Silliker & Quirk, 1997; Trudeau & Shephard, 2008). Further qualitative research by Stegman and Stephen's (2000) showed a relationship between athletics and academics. This relationship was positive in that athletics enhanced the academic performance of student-athletes. Several research studies investigating the effect of athletics on GPA noted higher grades for student-athletes in athletics than non-athletes (Mixon & Trevino, 2005). Similarly, Pressley and Whitley (1996) indicated extracurricular activities and GPA had a positive correlation. While they did not limit their study to athletics only, athletics were still part of the equation. Other research (Fox et al., 2010) investigated the link between physical fitness, sports team involvement and academic achievement among high school students. While it was clear there was significant benefit on athletic achievement, it was unclear if the findings were due to physical activity or sports team involvement. On the other hand, there is some research that points negatively to sports participation. In this case, research contends athletic participation has no affect on GPA or is even a detriment (Din, 2006; Gehring 2004a). Certainly literature seems to side with concluding athletics are a benefit to academic achievement.

While there is certainly a need for high school athletics and extracurricular activities, athletes must take responsibility for the "student" portion of the "student-athlete." The movie *Coach Carter* (2005) shows how athletes were motivated by their talent and ability, yet Coach Carter locked the gym for participation until his athletes found the motivation to succeed academically, take personal responsibility, and ultimately achieve team success in the classroom

before athletics. Building these moral principles is a big part of participation in athletics (Marasescu, 2012). Many institutions look to the coach to build the relationship with the student-athlete. The bond between coach and student-athlete enhances the student-athlete experience and will likely increase their academic motivation and overall ability to succeed in the classroom (Krebs, 2004). Students also form strong bonds and are able to keep each other accountable for not only their physical actions, but also their academic commitments. Bonding and commitment to the team is also influential in improving academic achievement. Students who feel a connection are more likely to stay in school and also to succeed at a high level in the classroom (Bryan et al., 2012). The facilitating structure that athletics provides is an essential component to the student-athlete's support team. This support team is crucial; Shuford (1998) suggests coaches should be the primary means of motivation and encouragement for student-athletes.

Gender and Academics

Significant research has been conducted concerning gender and high school academic achievement and motivation. A recent longitudinal study (Fortin et al., 2012) indicates females have a full point higher in regards to GPA than males. For example, if males have a 3.0 GPA, females would have a 4.0. Fortin and colleagues (2012) indicated the reasons were primarily related to motivation and a vision for the future. Females were more likely to have higher educational aspirations, whereas males saw themselves entering vocational school, military service, or something else entirely.

Similar findings were also reported by Sparks (2011). She pointed to a growing trend of motivating female students from an early age with the belief that they can do anything, including achieving their academic dreams of higher education. Women have continued to increase the

gender and academic gap over males throughout middle school and high school (Zembar, 2011). Other research has concluded similar results indicating that female interscholastic athletes have higher GPA and standardized test scores than males (Dowell, 2003; Kaufman, 2002; Stencil, 2006; Watkins, 2005; White 2007). College reports are no different. A recent report on college athletics showed females also had significantly higher GPA scores than their male counterparts (Burnett et al., 2010). This being the case, it seems clear females have the educational and academic motivation necessary to succeed in high school and beyond. Males seem to focus on their present situation, which includes their athletic-ability and immediate needs, such as maintaining eligibility requirements in order to sustain their athletic endeavors.

Self-Determination Theory

Motivation is all around human culture and is a part of each individual. In the realm of education, teachers, administrators, and faculty attempt to motivate students to perform specific actions such as improving their homework, their behavior, or attitude. Students in response choose whether to be motivated either externally through some sort of reward such as grades or a sense of likability from a teacher or they choose to be internally motivated by an interest in their subject matter or behavior. This sort of motivation is also present in the athletic culture and environment. Coaches desire the best performance from their players. In order to achieve this performance, they push certain aspects of internal or external motivation. Some student-athletes are driven by the crowd and recognition while others have an internal passion to practice, participate, and ultimately succeed in their sport. Regardless of their motivation, both forms of motivation can effectively prolong passion and success within an individual's sport.

Self-Determination Theory (SDT) incorporates a framework for studying humans in a social context, particularly as it relates to human motivation and personality structures (Deci &

Ryan, 2002). The theory encompasses not only intricacies of internal and external motivation but also views how other factors such as the environment around an individual or social culture contribute to their motivation. SDT thoroughly works with an individual's autonomy, competence, and relatedness. These three components are said to be universal in nature and are essential for humans to succeed in their activities and maintain optimal performance (Deci & Vansteenkiste, 2006). SDT states that when one of these areas is not met, it can have a major impact on an individual's mental wellness.

The applications from SDT can be far reaching and is seen in areas such as health, religion, education, physical fitness, athletics, and many others. In this case, the literature will be focused on athletics and education. The literature has never combined athletics and academics together, particularly combining the high school student-athlete and academic achievement components. There is limited research that combines both the athletic environment and academic culture together, particularly as it relates to SDT. SDT is considered by some as unique as it focuses on motivation and integration and why people do what they do and to what extent they do it (Ryan & Deci, 2000a). An individual's behavior or attitude is often influenced not only by the individual themselves, but also by a social regulation or circumstance (Deci & Ryan 1985b). SDT has been extremely helpful and reliable in predicting students' ability to learn activities, persist, and judging academic performance.

Self-Determined Motivation in the Academic Setting

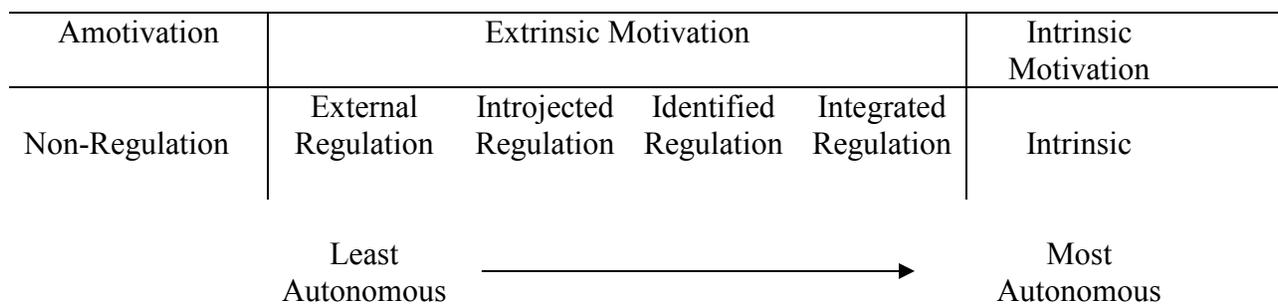
The study of motivation has increased over the past quarter century. SDT researchers often look at the underlying cause or quality of motivation. Self-determined behavior is generally defined as "the extent to which individuals engage in an activity out of personal choice and pleasure" (Guay & Vallerand, 1997, p. 212). Similarly, in the academic setting, teachers and

faculty often look at the quality of motivation in order to assist them in improving academic achievement (Kusurkar et al., 2012). These areas also specifically predict learning, achievement and continuation to college (Meece, et al., 2006; Reeve, 1996). In relation to SDT and academics, there are two underlying types of motivation; internal motivation and external motivation (Ryan & Deci, 2000a). All students are motivated through these forms of regulation unless they have a complete lack of motivation for their academic success.

A study by Vansteenkiste et al. (2006) attempted to link intrinsic and extrinsic motivation to academics while utilizing SDT. They broke intrinsic and extrinsic motivation into forms of behavior regulation. On a spectrum (Figure 1), the least “autonomous” (outside of amotivation or non-regulation) type of extrinsic motivation is external regulation, while the most autonomous form is intrinsic motivation (p. 237). Individuals with higher autonomous orientations tend to organize their behaviors, actions and interests intrinsically. Their beliefs are "anchored" within themselves (Wong, 2000, p. 315). Academically speaking, an example of external regulation would be a student who studies to earn excellent grades but only does so because their parents will pay them for every “A” he or she earns on their report card.

Figure 1

The Self-Determination Continuum



Note. Based on Deci and Ryan's (2000) Self Determination Continuum. Figure shows full autonomy on one side and lack of autonomy or amotivation on the other.

Introjected regulation is a second form of extrinsic motivation. This type of regulation is based on self-worth and feelings of guilt (Vansteenkiste et al., 2006). It is also said that an individual's actions and behaviors are relatively controlled (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005). An individual in this case has control over their actions as it is not entirely extrinsic nor is it intrinsic. An example of introjected regulation is a student who studies prior to a basketball game because they would feel guilty if they did not. They study before the game not because they feel they would not have quality time after the game to do so, but because of guilt.

Identified regulation is another form of extrinsic motivation. This is the process of recognizing the personal benefit in a particular action or activity. When an individual sees the activity as personally beneficial, they are more likely to participate or contribute without requiring significant explanation or motivation (Vansteenkiste et al., 2006). This is similar to intrinsic motivation, and is sometimes combined with intrinsic motivational components (Black & Deci, 2000). A student who studies anatomy and physiology because they know they will become a doctor later in life is regulating their motivation through identification. Or a student who states, "I've chosen to go to class today because it's important to me" is utilizing an identified regulation. Each of these forms is represented in multiple ways in many different students.

The most autonomous form of extrinsic motivation is integrated. While it is not entirely extrinsic, it is very nearly intrinsic and is sometimes lumped together with intrinsic motivation completely (Vallerand, Fortier, & Guay, 1997). Integrated regulation is performing an action or behavior because it represents oneself or lends to an individual's personal values. This is not as common in academics, but an example of such regulation is when an individual volunteers for a

specific cause because it feels right to him or her. Another example would be someone who attends church because they believe it is within their own core values to do so.

On the opposite side of the spectrum is amotivation. This form of motivation is a form of helplessness (Fortier, Vallerand, & Guay, 1995). Deci and Ryan (1985b) have concluded that individuals may find themselves on this end of the spectrum occasionally. This is most evident particularly when they feel or perceive their behaviors are caused by forces out of their control. This form of motivation is the lowest form of autonomy on the spectrum and places students and student-athletes in a difficult position to participate or learn at a high level. An example of this type of motivation is a student who failed an exam and blames his or her teacher for giving the exam in the first place and when given a chance to re-take the exam, declines, and ultimately does not feel or desire to improve from their first score.

Autonomous Academic Motivation and Achievement

Kusurkar and colleagues (2012) explored relationships between motivation, study strategy, effort, and academic performance among medical students. They found the higher the autonomous motivation, the more effort students placed on studying. They suggested investigating other student groups. In this case, student-athletes could be used. GPA was also utilized in this study as one of the investigated variables. Deci and Ryan (1985a) found similar results with a positive relationship between autonomy and academic performance. They however utilized a different measurement scale and also a different population from the present study. These studies are important as research has been shown empirically that motivation is a significant factor to consider when researching academic achievement and overall success (Grolnick, Ryan, & Deci, 1991).

Fortier and colleagues (1995) tested student's academic motivation and school performance. The students were to complete a survey questionnaire composed of items rated on a 5 point Likert-type scale where students indicated the extent to which each item corresponded to the reasons why they engaged in specific behaviors. The sample consisted of 9th grade students at a high school. The motivational variables were intrinsic and extrinsic (external, introjected, and identified regulation). The variable of school performance was similar to GPA, but only consisted of a student's final grades in four core subjects. Fortier and colleagues (1995) suggested that students who engage in school academics out of personal choice or pleasure will have higher levels of achievement than engaging in school for external reasons.

Guay and Vallerand (1997) investigated similar relationships between forms of regulation and academic achievement with 9th grade students. The instrument utilized in this study was the Academic Motivation Scale (AMS). The study by Guay and Vallerand (1997) is a similar research study in comparison to the present study in that the forms of regulation are being studied. Results from this study also suggested that there was a positive influence of self-determined motivation on academic achievement (Guay & Vallerand, 1997) just as the study by Fortier and colleagues (1995) determined.

Wong (2000) explored relationships between studying habits, academic performance, and commitment. She concluded the higher the autonomous orientation, the more positive the experience was for the students. In order to determine academic performance, she utilized class rank, determined through GPA which was collected by administrators. She did not have students self-report this data. While this particular study by Wong (2002) contained components of the present study, it may not be the most comparative research. Similarly however, Vansteenkiste and colleagues (2005) performed a correlational study where adolescents' learning was more

closely related to intrinsic forms of motivation than extrinsic components. By promoting intrinsic forms of motivation, academic benefits were much stronger, including significant learning of the material. Excessive focus on extrinsic relative to intrinsic life goals is associated with lower well-being, and a lesser ability to have an adaptive function (Vansteenkiste et al., 2005).

The present study looks to extend past findings about academic achievement among student-athletes by examining relationships between the various forms of motivation such as intrinsic, integrated, identified, introjected, and external regulation. Literature seems very clear that more autonomous forms of motivation increase academic performance in the general student population. However no research has been done on the student-athlete population. There is significant pressure in athletics and student-athletes may be more likely to have controlled or external forms of motivation (Vansteenkiste et al., 2006), particularly in an environment of commercialism, which increase feelings and experiences of being pressured or even forced to perform specific behaviors or activities. The blend of student and athlete raises an entirely different motivational composition to the surface for investigation and research.

SDT in Athletics

Successful athletes are often recognized as different or unique and are driven by motivation. Ryan and Deci (2000b) emphasized this as it influences how an individual feels, how they act, how they perceive the world around them, and how they compete in their sport. Why is it then that some athletes are more motivated to succeed than others? Some seem to rise to the pressure and expectations around them but others seem to crumble. Coaches often indicate and make known that the best players on their team are more driven or have a hunger that other athletes do not have. This hunger and drive seem to separate them from these higher level

athletes rest of the team. This does not, however, exclude non-elite athletes. SDT can be applied to all athletes in some method.

There has been a considerable amount of research surrounding the area of SDT and athletics (Ryan & Deci, 2000b). In athletics, an individual athlete has a choice to participate or not. His or her choice is an example of an internal locus of causality and focus on personal preference and value. It is an autonomous process an individual goes through in order to decide actions to take. The athletes take it upon themselves to make a personal choice. Contrasting is a failure to choose. This autonomous behavior is prevalent in the athletic environment. A contrasting example is when a parent forces or convinces their son or daughter to participate in athletics rather than the choice being that of the individual athlete. This pressure represents an extrinsic and controlled form of motivation. It often does not end well for the athlete or the team in which they participate.

Integrated and identified regulation is not only seen in academics but also in athletics. They are both external in terms of their motivation (Deci & Ryan 1985). An example of identified regulation may be an athlete who understands they have talent and they 'willingly' and continually practice and hone their skills, understanding that training is essential to improve their performance. Integrated regulation is closely related to intrinsic motivation but is still classified as extrinsic, and its associated behaviors are similar to that of intrinsic behavior. "What separates the two behaviors is that the integrated regulated behavior is performed to attain some separable outcome and this is deemed an extrinsically motivated behavior" (Mallett & Hanrahan, 2004, p. 185). An athletic example of this type of behavior is an athlete who continually practices because they recognize it is important if they want to succeed at a higher competitive level, but also because they see practice and their sport as a life lesson builder.

However, in the world culture and environment of athletics, some might say athletes are more motivated externally because of financial incentives, fame, and winning. This is true in some cases. In fact, a mini-theory called the Cognitive Evaluation Theory (CET) developed by Deci and Ryan (1985) investigates the environmental factors that may undermine or influence intrinsic motivation. According to CET, rewards can either enhance or weaken intrinsic motivation. Motivating athletes the right way is essential to creating a winning culture of athletics. Yet a winning culture may be perceived by an athlete as a detriment, thus lowering intrinsic motivation (Vallerand, Deci, & Ryan, 1987). The scale of the athlete may have an effect on how SDT plays out in the athletic arena. They may have a different motivational perspective. Research has examined Olympic level athletes which was helpful at providing insight from the perspective of the best athletes in the world. In the research study by Mallett and Hanrahan (2004), the Olympic athletes were asked a specific question as it related to money. The athletes responded by saying it was important, but recognition was even more important. This hits another area of SDT where individuals need the perception of being connected to others, particularly other members of their team. This is called relatedness and is one of the three universal aspects all individuals need to function at their best level (Deci & Vansteenkiste, 2006).

The support team for the athlete is also something to consider within the framework of SDT and athletics. Coaches, parents, faculty members, and peers are among the few members of an athlete's support structure. Social environments such as the athletic arena may provide an optimal test field for investigating the concept of relatedness within an SDT framework. Jõesaar, Hein, and Hagger (2012) investigated how athletes perceived members of their support team. Over the course of a year, athletes filled out a survey at two different points in order to see if

their motivational or interaction level with each member increased or decreased. More specifically related to motivation, the researchers desired to know if the relationship with the coach became more autonomous as the year progressed or if the relationship would have a greater influence on an athlete's sport participation tasks. This longitudinal study showed several points of interest. They investigated adolescents (age 11-16) who participated in swimming, badminton, basketball, soccer, or volleyball. Results concluded that the environment created by the coach should be focused on collaboration, learning, and encouraging effort. At this level, it is uncertain whether or not athletes themselves are more motivated by autonomous regulation or non-regulated motivators. However, relatedness seemed to be a theme in this case which could have contributed to the results as well. Athletes have higher performance when they have high relatedness and a connection and sense of belonging to their teammates and their coach.

A similar study by Jõesaar et al. (2011) investigated athletes in team sports such as basketball, soccer, and volleyball only. The athlete population was representative of high school athletes only. Again, they utilized the SDT framework in their study and completed another longitudinal research plan investigating relatedness, athletic persistence, and their level of motivation. Specifically related to their motivation the researchers utilized the Sport Motivation Scale. This was the original scale (Pelletier et al., 1995) that contained 28 questions and had a 7 point Likert-type scale rather than a 5 point scale as the revised SMS-II (Pelletier et al., 2013) contains. Only intrinsic motivational components were investigated in this study. The results of the model showed the more autonomous, competent, and related the athletes felt, the more intrinsically motivated they were. This study is consistent with others that have been discussed. Interestingly, they recommended further research within this age group to determine if the results

would be consistent. The present study will utilize this age and similar competitive nature (varsity team sports).

The type of athletes studied within the realm of SDT has been varied. Adolescents provide different motivational outcomes than do elite athletes. Elite athletes require exceptional psychological power and motivation to maintain their quest to perfection (Vallerand & Rousseau, 2001). The measure of an elite athlete according to Solberg and Halvari (2009) is an individual whose days consist primarily of activities focused on improving their performance such as training, eating properly, and studying the techniques related to their profession as an elite athlete. Elite athletes are consistently focused on competence as they are striving for excellence in their area. When it comes to setting goals, most athletes tend to set goals (Ingersoll, 2009). However, elite athletes often end up pursuing goals that may not be their own, leading to negative psychological interactions (Deci & Ryan, 2000) which could lead to poor athletic performance and outcomes. Elite athletes and other high performing athletes tend to have opportunities for many extrinsically regulated components such as fame, accolades, monetary compensation, and other incentives. But this area had not been studied within the context of SDT until Solberg and Halvari (2009) investigated elite athletes and their ability to frame goals for athletic performance. They concluded along with Deci and Ryan (2000) that goals should contain personal reasons and content for which the athlete is participating. This is what makes the goal worthwhile and worth accomplishing. When an athlete has a strong internal goal, they are more likely to have an autonomous motivational regulation leading to increased athletic performance.

Athletes are a unique population. Even further, and more specifically, high school student-athletes make up a more specialized and little studied group. In the case of high school

student-athletes, it seems there could be some inner conflict of motivation. While adolescents are still developing their psychological profile of motivation, they are also viewing college and professional sports; all the while still attempting to focus their attention on academics while balancing their athletic participation. Sports offer different forms of application of SDT within this population as "it is a domain characterized by both support and encouragement and pressure and critique" (Bartholomew et al., 2011, p. 96).

In the academic setting it is clear that students are more strongly motivated through higher autonomous behaviors and regulations. Yet athletes are at times more focused on external regulation. This is not to say some athletes are not motivated by autonomous behaviors, but external regulation is more prevalent with athletes than with traditional students who are not involved in athletics. Athletes desire strong competence in their sport, which is internally related, but the desire for external recognition does not seem to disappear for these individuals either. For a high school student-athlete, if the two motivations could be combined, through the use of the revised SMS-II, perhaps the two could motivations could be researched and found to reinforce each other. High school athletes and particularly this age group covet recognition from their classmates and teammates. This could be a crucial piece in the development of a model for high school student-athletes. No literature is available that investigates adolescent (high school age) student-athletes with regards to combining athletic and academic structures.

Potential Measurement Scales

Behavioral Regulation in Sport Questionnaire

A research study conducted by Lonsdale, Hodge, and Rose (2009) utilized the 24 item Behavioral Regulation in Sport Questionnaire (BRSQ) which included subscales to measure non-regulation, external, introjected, identified, integrated regulation, and intrinsic motivation. This

tool utilized a 7 point Likert-type scale and investigated athletes only. This scale was also originally backed by SDT, but utilized a totally new set of measurement items. The BRSQ-8 assessed integrated, identified, introjected, and external regulation along with non-regulation and three different forms of intrinsic motivation (accomplishment, experience, and knowledge); and the BRSQ-6 looked at the same items "but assessed general intrinsic motivation rather than all three types of intrinsic motivation" (Pelletier et al., 2013, p. 331). Ultimately according to Pelletier et al. (2013), the BRSQ does in fact have SDT constructs and patterns, but it does not differentiate enough between the subscales assessing self-determined motivation and the subscales assessing the non self-determined forms of motivation. The primary creators of the scale (Lonsdale, Hodge, & Rose, 2008) acknowledged more research was needed to clarify the connectedness of the self-determined motivation as this appeared to be a weak point in the scale.

The Academic Motivation Scale

The Academic Motivation Scale (AMS) is a valid and reliable tool utilized to measure the academic motivation of students (Vallerand et al. 1992). Until 2013, this tool had not been utilized with student-athletes as there was a one dimensional focus on students from both the college level and the athletic level (Turkmen, 2013). The AMS is also rooted in SDT and has "allowed researchers to distinguish relevant associations between motivation and academic variables" (Stover et al., p. 72). The instrument itself is a highly validated and reliable instrument; however its strongest criticism lies in the fact that it does not adequately represent the constructs of SDT well enough despite the connection.

The Sport Motivation Scale

The Sport Motivation Scale (SMS) was initially developed in 1995 by Pelletier et al. This particular scale was originally developed with 28 questions and was utilized in a variety of

international athletic settings and was found to be very useful in determining athlete motivation. According to Pelletier et al. (2007), the scale has very "good psychometric properties" (p. 618). It provides in-depth analysis to the myriad of motivational components that are present in athletic individuals. They also suggested there is substantial evidence showing that the scores on the SMS have strong predictive relationships with theoretically related constructs (Pelletier et al., 2007). Theoretical constructs such as SDT have been utilized with the SMS and have shown strong results. There is also evidence to support "nomological validity" for the SMS subscales (Lonsdale et al., 2008, p.323). Mallet and colleagues (2007) had criticisms of the original SMS and proposed an SMS-6. Their first criticism was the length and clarity of the questions. They proposed shortening it and rephrasing the questions to improve clarity. Another criticism was the lack of inclusion of integrated regulation (Mallett et al., 2007). At the time, the original researchers believed integrated regulation did not fall within the framework of SDT. However, this is not the case presently. Yet as the development of the SMS-6 concluded, it was still limited and ultimately had concerns surrounding external validity (Lonsdale et al., 2008). There were additional concerns with the SMS-6 as it related to inconsistencies in athletes external regulated behaviors. The original researchers indicated problems within the constructs in the SMS-6 were too great, leading to the development of another scale (Pelletier, Vallerand, & Sarrazin, 2007). Thus, in 2013, in response to criticisms raised, Pelletier et al. (2013) introduced the revised SMS-II. A panel of SDT experts (Deci, Ryan, Pelletier, and Vallerand) recognized issues with the original scale, saw what had been done in other scales such as the SMS-6, and aimed to improve the overall experience including the clarity, content and overall validity, believing it could be the best tool for use with the athletic population.

This revised SMS-II has significant reliability and validity which will be discussed in Chapter Three. But it appears this tool is a significant predictor in understanding the relationship between sport motivation and academic achievement. It also includes the controversial regulation style of identified regulation. Theorists had not determined a model that could include this piece until the new SMS-II as the scale did not seem to have a proper fit with other scales and had not demonstrated enough validity and reliability to be included. The new scale is considerably more concise, is more reliable in nearly every area, and has clarified content that is easier for athletes to understand. The researchers have suggested further research in multiple age groups (high school student-athletes have not been studied) and various sports. The present study will examine the team sports of basketball and football. Overall, the SMS-II represents a scale that is more consistent with the values and motivational constructs in SDT than the BRSQ or AMS. Until 2013, no literature had utilized this tool with the student-athlete population.

Grade Point Average

Grade point average (GPA) has long been used as a research tool to assess academic achievement in students. It is perhaps one of the most studied variables in educational and psychological research (Kuncel, Crede, & Thomas, 2005). However, despite its versatility, critics claim it can be difficult to generalize all GPA values to all states as there is no standardized country wide system (Camara et al., 2003; Camara & Michaelides, 2005). Yet even with these concerns, GPA is still utilized to predict academic success at the college level not only in student's first year, but throughout their college career (Geiser & Studley, 2003; Geiser & Santelices, 2007). In these studies by Geiser and Studley (2003) and Geiser and Santelices (2007), the researchers employed predictive-validity design and utilized logistical regression.

Despite the fact that these studies were performed with college students and prediction of their careers, GPA can still be utilized at the high school level to predict success.

When collecting data such as GPA, researchers must decide whether or not GPA should be collected through archival data or self-reported and gathering methods. Self-reported GPA has been shown to have high reliability against recorded archival data (Geiser & Santelices, 2007; Geiser & Studley, 2003; Kuncel, Krede, & Thomas, 2005; Shaw & Mattern, 2009). For educational researchers, most have argued self-reported GPA is sufficient for research and practical purposes (Cassady, 2001), however it should be noted, there is some variance and the overall decision to self-report rather than gather the data should be done on a case by case basis depending on the nature and circumstances to be studied.

Student-Athlete Characteristics

Student-athletes have a different psychological profile than traditional students (Friend, 2013). Every student experiences the academic components of daily life, including the homework, stress, and social constructs facing individuals each day during the school year. However, there are several components that separate students from student-athletes. These components are necessary to assist student-athletes in the day-to-day pressures. Student-athletes are often held to a higher standard of behavior and academic intelligence. They represent their institution including the values of that particular facility. The psychological well-being of athletes is often under-valued and neglected (Solberg & Halvari, 2009).

Student-athletes, particularly those on higher levels of competition (e.g. varsity versus junior varsity) face higher pressures. For example, a student-athlete in his junior and senior year in high school may be competing with other individuals from across the country to gain a scholarship from a higher education institution. This pressure can trickle down into the

individual's social, academic, personal, and athletic lifestyle. Confidence and self-belief were psychological characteristics that are incorporated into their mental structure and sets them apart from other student populations (MacNamara, Button, & Collins, 2010). Further, student-athletes are a very motivated population. They excel in commitment, determination, and motivation. These skills are necessary for a student-athlete to balance their priorities and academic and athletic motivations.

It is important to remember the student-athlete is first a student and second an athlete. The two can often be unfortunately mixed. Developing a proper psychological profile for student-athletes is compared to physical development as a child. Early on in a student-athlete's high school career, they may be mentally immature in terms of their motivation, stress, and mental anguish (Goldberg & Chandler, 1995). These struggles assist the student-athlete in developing their identity and solidify their existence in the academic and athletic environment.

Need for Proper Support

Support is needed for both high school and collegiate student-athletes. Administrators, coaches, teachers, counselors and parents are part of the support team assisting student-athletes in their endeavors. Finding balance in their academic and athletic careers is essential to their success. At times it is necessary for the members of this team to assist student-athletes and bring them back to psychological safety (Goldberg & Chandler, 1995). Failing to do so, could be detrimental to many aspects of the individual's life.

Some have referred to the athletic triangle in the realm of psychological profiling of athletes. The athletic triangle involves the parent, athlete, and the coach. Establishing this triangle, support staff such as guidance counselors must build relationships with each member in order to secure their trust (Wylleman, 2000). This relationship and offered support is crucial for

the early development of the student-athlete (Goldberg & Chandler, 1995). Finding the proper motivation for these students can help assist the student in developing proper study habits and behavioral patterns. Sports can play a unique role in the life of an adolescent. Balancing the student-athlete's life in the academic and athletic environments is the responsibility of the entire support team. Developing their values and skills will assist them as they prepare for higher education as well as other aspects of life.

Summary

High school athletics continues to be a popular extra-curricular activity for students who are looking to attend institutions of higher education. As the student-athlete population has fed the university system with high level athletes, the focal point has begun to shift in focus from their athletic abilities to academic abilities and motivations (Van Rheenen, 2013). As the commercialization of college and high school athletics continues to rise, student-athletes will also strive to make it to the elite college athletic level. However, their academic performance may be a negative byproduct of the time spent participating in their sport causing motivation to be focused on athletics rather than academics. A focus on academic motivation must occur within the high school student-athlete population in order to allow student-athletes to achieve high academic levels in college.

As student-athletes are faced with academic and athletic challenges, experts have investigated several influential areas that wage against student-athletes. Gender appears to top the list. Student-athletes begin their higher education academics in college and males in particular are shown to be more academically deficient than their female counterparts (Fortin et al., 2012). While the NCAA and its population of athletes has been heavily studied in regards to both males and females, experts have largely ignored or neglected to research high school

athletes. Further research should occur at the high school age level where meaningful changes and study patterns can occur (Steinmayr & Spinath, 2009). In addition to investigating high school aged males, it is also necessary to identify if there are any differences among the sports of basketball and football. These two sports are the primary means of funding for many institutions (Gehring, 2001; Solomon, 2013).

The SDT seems to be the most appropriate theory to use as a framework for investigating the motivational levels of high school male student-athletes. The choice to use SDT over other theories was based on the fact that motivation is present everywhere in some form. SDT allows researchers to focus on the aspects of human personality and choice while specifically investigating intrinsic and extrinsic motivation (Deci & Ryan, 2002). These two components of motivation are robust in athletes and are detectable within SDT. The applications that can be learned from SDT are broad, but in this specific case, a team approach to motivating student-athletes to perform at a high level through their academics remains a priority. Coaches, parents, administrators, and others can assist student-athletes whether they have a stronger intrinsic or extrinsic motivation to succeed. Knowing a student-athlete's motivational make-up could potentially improve pedagogical techniques and narrow the seemingly present motivational gap.

CHAPTER THREE: METHODOLOGY

The purpose of this predictive correlational regression study was to test the Self-Determination Theory that relates various types of intrinsic and extrinsic motivation (i.e. intrinsic, integrated, identified, introjected, external, and non-regulation) to students' overall cumulative grade point average (GPA). Sport type and grade are covariates in this study while athletic status and gender are controlled. Students from six public high schools were surveyed to measure the relationship motivation has to academic performance. A hierarchical multiple regression was utilized to show the relationship between the predictor variables and the criterion variable. This chapter will discuss the design, research questions and hypotheses, the participants, and the setting for this study. Further, the instrumentation, procedures, and data analyses methods will be described in detail to provide specific techniques that were used for collecting and analyzing the data.

Design

A predictive correlation design was utilized to investigate to the association between male high school (10th-12th grade) student-athletes' motivation and academic achievement while athletic status and gender are controlled. The aim of the study was to examine relationships (i.e. associations or correlations) between variables and potential predictable changes, thus this research would be considered correlational in design and appropriate for the present study (Rovai, et al., 2013). Further, research in the area of academic achievement and motivation with high school student-athletes is warranted and would be considered exploratory as there has been little to no research performed on this population, specifically as it relates to the research design and analysis performed in this study.

Communication and correspondence with the primary theorists revealed that significant research has focused on motivation and academic achievement and athletics separately but a need for further research that combines the athletic and academic components together at the high school level would be beneficial (R. Ryan, personal communication, April 13, 2013). Further, other studies have utilized multiple regression analyses to determine both student engagement and sports participation at the collegiate level (Gaston-Gayles & Hu, 2012), while other research has utilized high school students (Steinmayr & Spinath, 2009). Correlational designs such as the present study will investigate and review the results to predict potential or possible relationships between variables (Gall et al., 2007) for future use in research.

Research Questions and Hypotheses

The research questions for this study are:

RQ1: Will the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation predict academic achievement of male student-athletes, while controlling for demographic (i.e. grade) and athletic variables (i.e. sport type)?

RQ1a: Will there be a statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement?

RQ1b: Will there be a statistically significant contribution from grade to the model for predicting male student-athlete academic achievement?

RQ1c: Will there be a statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement?

RQ1d: Will there be a statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement?

RQ1e: Will there be a statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement?

RQ1f: Will there be a statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement?

RQ1g: Will there be a statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement?

RQ1h: Will there be a statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement?

The following are the research hypotheses:

H1: There will be a statistically significant relationship between the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation and the academic achievement of male student-athletes while controlling for demographic (i.e. grade) and athletic variables (i.e. athletic sport type).

H1a: There will be a statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement.

H1b: There will be a statistically significant contribution from grade to the model for predicting male student-athlete academic achievement.

H1c: There will be a statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement.

H_{1d}: There will be a statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement.

H_{1e}: There will be a statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement.

H_{1f}: There will be a statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement.

H_{1g}: There will be a statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement.

H_{1h}: There will be a statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement.

Alternatively, the following are the null hypotheses:

H_{0i}: There will be no statistically significant relationship between the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation and the academic achievement of male student-athletes while controlling for demographic (i.e. grade) and athletic variables (i.e. sport type).

H_{0ia}: There will be no statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement.

H_{0ib}: There will be no statistically significant contribution from grade to the model for predicting male student-athlete academic achievement.

H_{0ic}: There will be no statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement.

H_{01d}: There will be no statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement.

H_{01e}: There will be no statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement.

H_{01f}: There will be no statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement.

H_{01g}: There will be no statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement.

H_{01h}: There will be no statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement.

Participants

A convenience sample of 140 ($n=140$) students were selected, however two were removed making the final sample size of 138 ($n=138$). These student-athletes were enrolled at one of six high schools in the north central and northeast region of South Carolina. The reasons these schools were selected was due to convenience and accessibility (Rovai et al., 2013). According to Warner (2013), through calculating power analysis (.80) and effect size (.05), one can arrive at the minimum sample size for a study. The formula for selecting the appropriate number of participants is $104 + k$, with k indicating the number of predictor variables (six) in the research study. Further, due to the definition of student-athletes for this study, only athletes who have obtained enough credits to be considered 10th through 12th grade were considered in this study, and the athletes were limited to varsity rosters only.

Demographic data on these student-athletes was collected and consisted of race, age, grade (10, 11, or 12), sport (basketball or football), athletic status (varsity) and cumulative GPA

based on a 4.0 scale and the South Carolina uniform grading scale. Students were recruited directly from each school. Conversations with each football and basketball coach took place and a team meeting was set in order to recruit an adequate number of participants. At the team meeting, the nature of the study was discussed and questions about the nature of the study were answered.

In order to motivate students and assist in reaching the sufficient sample size, there was a drawing for prizes. Research has shown incentives increase response rate and sample size (Singer & Bossarte, 2006). Additionally, Beckford and Broome (2007) indicate several advantages of rewarding such as recruitment, higher retention, and subject recognition and reward. While there are disadvantages such as possible undue inducement of subjects, the value of the gift card will intentionally be minimal, to limit this disadvantage. There were a total of six gift cards given at random to the participants who correctly completed the survey and returned their informed-consent forms. Winners were notified and had a choice of a \$10 Amazon gift card or a \$10 iTunes gift card. The researcher purchased the gift cards for utilization in this study.

Setting

The male student-athletes were selected from six public high schools in three different counties. The high schools are of various sizes ranging from a minimum of 739 students to a maximum of 1,730 students (Table 3.1). The total demographics from all of the institutions vary. Each school offers what the NCAA designates as major sports such as basketball and football, thus each of the targeted schools would qualify to participate. Many schools offer multiple sports for their student-athletes. In this case, only varsity athletes in grades 10th through 12th who were involved in basketball or football were surveyed. These athletes are

likely to be considered more elite or advanced in their skill set. As mentioned previously, the definition of "elite" is fuzzy (Ingersoll, 2009). For this study, elite is delineated as having superior athletic talent and ability in their athletic area. Junior varsity and other lower level competitive levels were excluded. Varsity athletics tend to produce higher athletic ability and talent than the lower levels (Eiges-Hansen, 2014).

Table 3.1

School Information

School	Classification	Total Student Enrollment	Boys Sports Offered ^a	Total Athletes on Football and Basketball ^b
School 1	AAAA	1,730	CC, GLF, TRK, BB, SOC, TEN, SWM	77
School 2	AAAA	1,638	CC, GLF, TRK, BB, SOC, TEN, SWM	76
School 3	AAA	1,146	CC, GLF, TRK, BB, SOC, TEN, SWM	66
School 4	AAA	1,045	CC, GLF, WRL, TRK, BB, SOC, TEN, SWM	62
School 5	AAA	874	CC, GLF, WRL, TRK, BB, SOC	55
School 6	AA	739	CC, TRK, BB, SOC, TEN	52

Note. CC = Cross Country; GLF = Golf; TRK = Track; BB = Baseball; SOC = Soccer; TEN = Tennis, WRL = Wrestling

^a Does not include football or basketball

^b Varsity athletes only

All schools were on block scheduling, as opposed to hour or period schedules and each school offered all or some of the following course difficulties: honors, advanced placement, dual credit, college preparatory, and International Baccalaureate classes. Honors courses are classes

which place extra emphasis on "critical thinking, analytical thinking, rational decision making, and inductive and deductive reasoning" (South Carolina Department of Education, 2012, "Uniform Grading Policy, Honors," para. 1). These classes are designed to challenge students more than the traditional college preparatory curriculum. Dual credit courses are also offered at some of the schools and are designed to allow the student to enroll in a postsecondary institution as well as their high school. Students can receive credit towards a baccalaureate degree or to an associate degree. Advanced placement and the International Baccalaureate courses are offered by a high school with the academic rigors of the collegiate setting. Students enrolled in these courses can expect a significant increase in workload in comparison to the traditional college preparatory track. Class schedules and difficulties were controlled by utilizing the student's GPA on a 4.0 scale. This scale takes all course weights into consideration when compiling their overall GPA. Utilizing the 4.0 GPA effectively neutralized the variation in classes allowing all GPAs to be on the same plane.

Instrumentation

Variables

Predictor variables and the revised sport motivation scale.

The six motivation variables of intrinsic regulation, integrated regulation, identified regulation, introjected regulation, extrinsic regulation, and non regulation are the predictor variables under study. The motivation predictor variables were collected via the revised Sport Motivation Scale (See Appendix B for instrument) (Pelletier et al., 2013). The SMS-II can be used in conjunction with SDT to measure the various forms of intrinsic and extrinsic motivation. The original Sport Motivation Scale (SMS) was created in 1995 and included seven factors but did not include integrated regulation (Pelletier et al., 1995). The revised SMS-II on the other

hand measures all six factors (intrinsic, integrated, identified, introjected, external, and non regulation). Both scales are based on SDT, but the original SMS had received several criticisms over the years leading to research and development of new scales. The revised SMS-II is the latest and most current validated version of the SMS (Pelletier et al., 2013). Due to the relatively new research performed on the SMS-II, there are little to know research studies utilizing the SMS-II in this manner.

The validation study by Pelletier and colleagues (2013) used “factor analysis, tests for internal consistency, and correlations among the different subscales and between the subscales and several outcomes of interest, supported the validity of the SMS-II” (p. 329). It also revealed the original scale could be reduced from 28 questions to 18 questions while still carrying themes and important factors from SDT (Pelletier et al., 2013). The reliability of each subscale was calculated using Chronbach’s alpha. In the first test, the SMS-II yielded high reliability ($\alpha > .70$) for all subscales using Cronbach's alpha, with four out of six having a significantly higher reliability ($> .80$) (Table 3.2) than the original SMS. The second test revealed similar results using Cronbach's alpha ranging from 0.73 to 0.86 for reliability. The researchers set a cut-off mark at 0.70. Reliability below .70 is generally unacceptable in research. The value of providing Chronbach’s alpha is that it shows the index of the internal consistency of the scores (Warner, 2013). The lower the reliability score, the lower the relationship between the variables.

Table 3.2

Reliability of the revised Sport Motivation Scale

Survey Tool	Variables	Chronbach's alpha
SMS - II	Intrinsic	0.88
	Integrated	0.80
	Identified	0.82
	Introjected	0.70
	External	0.74
	Amotivated	0.81

Considering the fact that reliability is an essential component to research of this type, four methodologies are often used to check and estimate reliability: alternative forms, test-retest, intertester reliability, and internal consistency (Gall et al, 2007). A check for internal consistency was utilized in present case, including Chronbach's alpha, as the other forms do not apply in this research study. In this study, an internal consistency check will show the degree to which items within the scale (SMS-II variables) relate to each other and predict other variables (GPA). Internal consistency reliability of a scale is necessary and will include utilizing Spearman-Brown's formula to calculate (Gall et al., 2007).

The SMS-II is an 18 question survey using a 7 point Likert-type scale. Five and 7 point scales will produce better resulting means than 10-point scales (Dawes, 2008). The following scale was used, 7= corresponds completely, 6= corresponds quite a lot, 5= corresponds quite a bit, 4= corresponds moderately, 3= corresponds a little, 2= corresponds very little, 1= does not correspond at all. There are three questions relating to each of the six motivation predictor variables (intrinsic, integrated, identified, introjected, external, and non-regulation). One example of a question is, "Because people around me reward me when I do" (Pelletier et al., 2013). This question is one of the three questions related to external regulation. If the student-

athlete scored a 7 on this question, this means the question corresponds completely to them. There are two other questions in regards to external regulation. Individual scores were used to examine each area of motivation. A total score of 21 on the three related questions would indicate high regulation while a score of 3 would denote the student-athlete does not have any regulation in that particular area. The higher the individual scores in each combination of questions would determine what area of motivation is most prominent in each student-athlete. The new scale "is a recommended alternative to the SMS, and is more theoretically aligned in its item content, performs as well or better than the original scale and is overall briefer and more efficient to administer" (Pelletier et al., 2013, p. 339). Permission to utilize this instrument within the context of this dissertation was provided by Dr. Luc Pelletier, the creator of the survey tool (See Appendix A).

Demographic, sport type, and academic variables.

The demographic portion of the survey assisted in providing more thorough information about the sample population and ensured accuracy of the research group under study. The demographic survey along with the SMS-II included academic and demographic questions of age, grade, race, sport type, athletic status, and GPA. Grades were coded as 10, 11, or 12. Ethnicity or race and age were also be evaluated through the demographic section. Age was indicated in the survey by "What is your age" where race or ethnicities were asked by, "What is your race ethnicity?" Age was coded by their actual age in years. Choices of White, African American, Asian, Hispanic, and Other were in the demographic portion of the survey and were coded as such for demographic and descriptive purposes. Sport type was asked by, "What sport do you play" and was coded as 0 for football and 1 for basketball and 2 for both.

Criterion variable (GPA).

Grade point average was collected through school archival data but self reported on their survey. Each student will look up their GPA on PowerSchool to verify prior to filling out the survey. All public schools in South Carolina participate in a uniform grading policy. The current grading policy took effect prior to the 2007-2008 school year and remains in place now (South Carolina Department of Education, 2012). The scale is a uniform grading scale that takes into effect all types of course enrollment (Dual Credit, Honors, Advanced Placement, International Baccalaureate and College Prep). It is weighted based on the difficulty of courses, but can be translated across academic course work. Courses such as honors (H), advance placement (AP), international baccalaureate (IB), dual credit (DC), and college prep (CP) carry different quality points or weights. According to the South Carolina Department of Education, one half of a quality point (.5) is added to the CP weighting for honors courses. Only AP, IB, and DC courses can be awarded a full quality point above the CP weighting. All South Carolina public schools will use the following formula to compute GPAs:

$$\text{GPA} = \frac{\text{sum (quality points x units)}}{\text{sum of units attempted}}$$

A typical summary of a student's PowerSchool account includes the GPA, courses taken, quality points, units, and the computation resulting in the final GPA on a 4.0 scale. According to the uniform grading scale, the various courses have different GPA calculations ranging from a high of 4.875 for CP to a high of 5.875 for IB, DC, and AP coursework (Table 3.3). However, due to this complexity, the above formula was utilized to neutralize the various coursework. However, the grades were converted to the 4.0 scale utilizing the formula to ensure consistency among the grading scales and courses.

GPA has been shown to be a predictor of academic success in higher education (Bacon & Bean, 2006; Geiser & Santelices, 2007). GPA was verified through archival data due to the complexity of grading scales and to ensure accuracy of the data. Some indicate self-reporting of GPA is sufficient (Bacon & Bean, 2006; Cassady 2001; Kuncel, Crede, & Thomas, 2005), and have reported correlations ranging from .82 to as high as .97. The differences between the reliability measurements according to the researchers were likely due to the complex system of GPA utilized in the high schools under study. The studies were not conducted in the same states and therefore had different GPA scales. For the purposes of this study, school archival data was collected through PowerSchool and was then self-reported by each athlete on the survey. According to a report by Shaw and Mattern (2009), 20% of African American and 15% of White students will inflate their GPA scores when they are not completely sure of their GPA and they are asked to self-report. These two ethnicities are the two most prominent races under study in this particular case (US Census Bureau, 2012).

Table 3.3

South Carolina Uniform Grading Scale Conversion Chart

Average	Grade	College Prep	Honors	Dual Credit/AP/IB
100	A	4.875	5.375	5.875
99	A	4.750	5.250	5.750
98	A	4.625	5.125	5.625
97	A	4.500	5.000	5.500
96	A	4.375	4.875	5.375
95	A	4.250	4.750	5.250
94	A	4.125	4.625	5.125
93	A	4.000	4.500	5.000

Note. Excerpt from the South Carolina Uniform Grading Scale Conversion Chart

Procedures

A letter was sent to the superintendent's office at each school district, and plans were made to meet with the athletic director and principal at each participating school in order to

explain nature of the study. Conditional approval from the school districts was granted to perform the research for the study based on Institutional Review Board (IRB) approval. Once the IRB approved the study (See Appendix D), the official data collection process began. Upon final roster completion by coaches a meeting took place at practice or during the school day where students were informed of the voluntary research study (See Appendix E). Any willing participants took home an informational letter and consent form (See Appendix F and G). The letter stated that completing the survey was completely voluntary; however by completing the survey, they would have the potential to win a prize for participating in the study.

During a second team meeting, student-athletes took the survey. Prior to taking the survey, they provided their own assent to the survey and listened to instructions. Final questions were also answered. Qualifying student-athletes were given the survey administered by the principal researcher (See Appendix B and C). The student-athletes were able to review their Grade Point Average on PowerSchool prior to taking the survey. They took the survey in the school computer lab or another room where a computer was accessible. It was important for the students to take the survey in a comfortable environment. Students in a comfortable environment may be more likely to complete a survey (People Pulse, 2012). The SMS-II was administered on paper as email addresses were difficult to obtain. Upon completion of the survey, the researcher compiled demographic information (race, sport type, and athletic status) as well as the scores of each predictor variable from the survey, and placed them into a spreadsheet. The transfer of data was done by the principal researcher.

All information collected remained confidential. Data was collected over a four week time period due to constraints in meeting each team and collecting the required consent forms prior to beginning the surveys. In terms of collecting the GPA data, all courses up to the nearest

completed semester were included. Students were asked to access PowerSchool just prior to completing their survey to obtain their GPA. They completed the demographic portion and SMS-II. All collected data was stored by the principal researcher on a password protected personal computer. Only the research committee members (three persons) and researcher had access to the results. The survey data was then coded and analyzed through the use of Statistical Package for the Social Sciences (SPSS) (Version 20.0).

Data Analysis

A hierarchical multiple regression analysis was used to analyze the data. A multiple regression is used to predict or determine the relationship between one variable and two or more other variables (Gall et al., 2007) while more specifically, a hierarchical multiple regression allows a researcher to analyze relationships between more than one predictor variable and one criterion variable (Warner, 2013). In this instance, motivational variables were used to predict academic achievement. A significance of .05 was used to analyze the hypotheses, which is most commonly used and widely accepted in academic research (Tabachnick & Fidell, 2007). Significant findings at this level will not initially determine a failure to reject the null hypothesis, as further testing and future studies must replicate the study to infer specific conclusions or findings from this study (Rovai et al., 2013). Significance is the tool that is used to determine the rejection or failure reject the hypotheses (Tabachnick & Fidell, 2007).

Prior to final analyses, several assumption tests were performed in order to ensure a valid result (Table 3.4). Criterion variables must be continuous (i.e. ratio or interval) where predictor variables must be either continuous or categorical (i.e. ordinal or nominal) (Gall et al., 2007). In this case, the predictor variables are ordinal and the criterion variable is interval. Linearity and homoscedasticity of the predictor and criterion variables was evaluated by using a scatterplot.

Points on the plot should be evenly distributed, or cigar shaped, around the diagonal or horizontal line. The presence of significant outliers or a bent cluster or pattern may indicate a violation (Rovai et al., 2013). Box plots were used to determine the existence of outliers. An additional assumption is normality. A histogram was used to ensure the absence of a violation by looking for a normal bell shaped curve (Warner, 2013). Finally, residuals were tested through a P-P plot to ensure normal distribution while Cook's distance was further used to measure this and also test for multivariate outliers. If there were a large presence of outliers or residuals, the accuracy of the regression analysis could be affected (Tabachnick & Fidell, 2007). In this case, in the event an outlier was found, accuracy should first be examined. Data could have been mistakenly entered or a recording error may have occurred. If the outlier was still present, the uniqueness of the score should also be considered (Warner, 2013). If the outlier's score was not a transfer error or scoring error, some researchers may consider removing the outlier completely. This is what is meant by "uniqueness." However, consideration about whether to remove the outlier should be a cautious decision. Removal of data can have significant ramifications (Gall et al., 2007). If these methods fail to have an impact, the use of parametric and nonparametric analyses could be used if the outlier remains in the study. This would show how much affect the outliers are having. Mahalanobis D could also be utilized to determine the degree of influence within the outliers (Warner, 2013). At times, it may be appropriate for the researcher to run the analysis with and without the outliers to see if there is a change to the correlation. However, if the score changes, it must be noted in the results section.

Table 3.4

Explanations of Data Analysis Tests

Data Analysis Test	Purpose
Standard Multiple Regression	Examines the unique strength and contribution of relationships between each variable
Scatterplot	Utilized to ensure linearity and homoscedasticity of the predictor and criterion variables.
Histogram	Examined to ensure normal distribution of data
Probability-Probability Plot (P-P Plot)	Examined to ensure normal distribution of residuals
Cook's Distance	Checked for multivariate outliers
Correlation Matrix	Used to examine relationships between variables and to test the assumption of multicollinearity and singularity.
Variance-Inflation Factor (VIF)	Assessed to determine the presence or absence of multicollinearity

Additionally, a correlation matrix was used to assess relationships between variables and to test the assumption of multicollinearity and singularity. The r value was specifically viewed to determine a relationship between the variables (Gall et al., 2007). Values or correlations are measured on a coefficient scale of -1.0 to 1.0, where negative correlations are closer to -1.0, no correlation is 0.0 and a positive correlation is 1.0 (Gall et al., 2007). The variance inflation factor (VIF) was also utilized to determine the presence of any multicollinearity. This was computed through SPSS. Researchers prefer a lower VIF as higher levels may affect the overall results of the multiple regression analysis. Many researchers suggest the value of 10 to be the maximum threshold for VIF (Hair et al., 1995; Warner, 2013).

A key distinction to hierarchical multiple regressions is how the data is entered (Tabachnick & Fidell, 2007). This type of regression allows data to be entered in steps. A regression in this case reveals how well each predictor variable (motivators) predicts the criterion variable (GPA), while removing effects of the control variables. By adding variables in steps, it allowed the researcher to determine unique relationships more specifically (Warner, 2013). In this case, data was entered in "blocks." Steinmayr and Spinath (2009) utilized blocks in their research. It was recommended that demographic variables be entered into the research first followed by controls, and finally predictor variables. Block one will contain both covariates (sport type and grade) and block two will include the six predictor variables (non-regulation, external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic regulation). The order of the predictor variables in block two is somewhat arbitrary, however they are ordered from the most autonomous form of motivation to the least autonomous form (Table 3.5).

Table 3.5

Data Input Sequence for the Present Study

Data Source Blocks	Variables
Block 1	Sport Type Grade Level
Block 2	Intrinsic Regulation Integrated Regulation Identified Regulation Introjected Regulation External Regulation Non-Regulation

The variables used in the regression that are categorical cannot be simply entered into the regression model and have a purposeful interpretation. In order to include categorical data, a

process called dummy coding will need to be utilized (Warner, 2013). The covariates of sport type and grade will need to be coded in order to be entered into the equation. Grades were coded as the athlete's year in school (10, 11, or 12). For the variable sport type, the number 0 was assigned to those who play football and the number 1 to those who play basketball and the number 2 to those who participate in both sports. Age and race were coded for demographic purposes. Age was coded as their number of years and Race as the following: White, African American, Asian, Hispanic, and Other. The information presented in Table 3.6 includes a summary of the utilized theoretical framework, the variables, the data source, and units of measurement.

Table 3.6

Variables and Measurement Methods

Theoretical Framework & Research	Variable	Data Source/Measurement	Unit of Analysis
Self Determination Theory	Predictor Variables		(Used for all Predictor Variables)
Deci & Ryan, 1985b; Pelletier et al., 2013, Turkmen, 2013 Vansteenkistie, et al., 2006	- Intrinsic Regulation	SMS-II Survey Question #3: "Because it is very interesting to learn how I can improve."	7 point Likert-type scale: 1-7
		SMS-II Survey Question #9: "Because I find it enjoyable to discover new performance strategies."	1= Does not correspond at all 2= Corresponds very little 3= Corresponds a little 4= Corresponds moderately 5= Corresponds quite a bit 6= Corresponds quite a lot 7= Corresponds completely
Used for all predictor variables		SMS-II Survey Question # 17: "Because it gives me pleasure to learn more about my sport."	
	- Integrated Regulation	SMS-II Survey Question # 4: "Because playing sports reflects the essence of who I am."	
		SMS-II Survey Question #11: "Because participating in sport is an integral part of my life."	
		SMS-II Survey Question # 14: "Because through sport, I am living in line with my deepest principles."	

Variables and Measurement Methods (Continued)

Theoretical Framework & Research	Variable	Data Source/Measurement	Unit of Analysis
Self Determination Theory Deci & Ryan, 1985b; Pelletier et al., 2013, Turkmen, 2013 Vansteenkistie, et al., 2006 Used for all predictor variables	- Identified Regulation	SMS-II Survey Question # 6: "Because I found it is a good way to develop aspects of myself that I value." SMS-II Survey Question #12: "Because I have chosen this sport as a way to develop myself." SMS-II Survey Question #18: "Because it is one of the best ways I have chosen to develop other aspects of myself."	(Used for all Predictor Variables) 7 point Likert-type scale: 1-7 1= Does not correspond at all 2= Corresponds very little 3= Corresponds a little 4= Corresponds moderately 5= Corresponds quite a bit 6= Corresponds quite a lot 7= Corresponds completely
	- Introjected Regulation	SMS-II Survey Question #1: "Because it is one of the best ways I have chosen to develop other aspects of myself." SMS-II Survey Question #7: "Because I would not feel worthwhile if I did not." SMS-II Survey Question #16: "Because I feel better about myself when I do."	

Variables and Measurement Methods (Continued)

Theoretical Framework & Research	Variable	Data Source/Measurement	Unit of Analysis
Self Determination Theory Deci & Ryan, 1985b; Pelletier et al., 2013, Turkmen, 2013 Vansteenkistie, et al., 2006	- External Regulation	SMS-II Survey Question #5: "Because people I care about would be upset with me if I didn't." SMS-II Survey Question #8: "Because I think others would disapprove of me if I did not." SMS-II Survey Question #15: "Because people around me reward me when I do."	(Used for all Predictor Variables) 7 point Likert-type scale: 1-7 1= Does not correspond at all 2= Corresponds very little 3= Corresponds a little 4= Corresponds moderately 5= Corresponds quite a bit 6= Corresponds quite a lot 7= Corresponds completely
Used for all predictor variables	- Non Regulation (Amotivation)	SMS-II Survey Question #2: "I used to have good reasons for doing sports, but now I am asking myself if I should continue." SMS-II Survey Question #10: "I don't know anymore; I have the impression that I am incapable of succeeding in this sport." SMS-II Survey Question #13: "It is not clear to me anymore; I don't really think my place is in sport."	
Burnett et al., 2010; Fortin et al., 2012; SC Department of Education, 2012	Criterion Variable - Grade Point Average	Self reported and confirmed with school PowerSchool records	Weighted GPA Scale

Variables and Measurement Methods (Continued)

Theoretical Framework & Research	Variable	Data Source/Measurement	Unit of Analysis
Demographic Data			
Guay & Vallerand, 1997	Age	Self-report survey; #1; "What is your age?"	Self reported number
Guay & Vallerand, 1997; Steinmayr & Spinath	Grade	Self-report survey; #2; "What is your grade?"	Based on the following scale: 10, 11, or 12
Pelletier et al., 2013	Sport Type	Self-report survey; #4; "What sport(s) do you play?"	Self reported sports of basketball and football

CHAPTER FOUR: FINDINGS

This particular study sought to examine the relationship between student-athlete athletic motivation and classroom grade point average of 10th-12th grade male high school basketball and football players. The study controlled for demographic (i.e. grade) and athletic variables (i.e. sport type). This control was in place with intentions to achieve more specific data results.

Research Questions and Hypotheses

The following research questions were used to conduct this study:

RQ1: Will the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation predict academic achievement of male student-athletes, while controlling for demographic (i.e. grade) and athletic variables (i.e. sport type)?

RQ1a: Will there be a statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement?

RQ1b: Will there be a statistically significant contribution from grade to the model for predicting male student-athlete academic achievement?

RQ1c: Will there be a statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement?

RQ1d: Will there be a statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement?

RQ1e: Will there be a statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement?

RQ1f: Will there be a statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement?

RQ1g: Will there be a statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement?

RQ1h: Will there be a statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement?

The following are the research hypotheses:

H1: There will be a statistically significant relationship between the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation and the academic achievement of male student-athletes while controlling for demographic (i.e. grade) and athletic variables (i.e. athletic sport type).

H1a: There will be a statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement.

H1b: There will be a statistically significant contribution from grade to the model for predicting male student-athlete academic achievement.

H1c: There will be a statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement.

H1d: There will be a statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement.

H1e: There will be a statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement.

H_{1f}: There will be a statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement.

H_{1g}: There will be a statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement.

H_{1h}: There will be a statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement.

Alternatively, the following are the null hypotheses:

H_{0i}: There will be no statistically significant relationship between the Sport Motivation Scale motivational factors of intrinsic, integrated, identified, introjected, external, and non-regulation and the academic achievement of male student-athletes while controlling for demographic (i.e. grade) and athletic variables (i.e. sport type).

H_{01a}: There will be no statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement.

H_{01b}: There will be no statistically significant contribution from grade to the model for predicting male student-athlete academic achievement.

H_{01c}: There will be no statistically significant contribution from external regulation to the model for predicting male student-athlete academic achievement.

H_{01d}: There will be no statistically significant contribution from introjected regulation to the model for predicting male student-athlete academic achievement.

H_{01e}: There will be no statistically significant contribution from identified regulation to the model for predicting male student-athlete academic achievement.

H_{01f}: There will be no statistically significant contribution from integrated regulation to the model for predicting male student-athlete academic achievement.

H_{01g}: There will be no statistically significant contribution from intrinsic regulation to the model for predicting male student-athlete academic achievement.

H_{01h}: There will be no statistically significant contribution from non-regulation to the model for predicting male student-athlete academic achievement.

Descriptive Statistics

Demographic data for the 138 participants is presented in Table 4.1. For ease of data entry, all categorical variables (sport type and ethnicity) were dummy coded. The age of the participants ranged from 14 to 19 years old, with a mean age of 16.27 ($SD = .88$). Among the participants, 68.8% identified themselves as African American, 28.3% as Caucasian, 1.4% as Other, and .7% for both Asian and Hispanic ethnicities. Grade classification of the participants included 42 (30.4%) sophomores, 49 (35.5%) juniors, and 47 (34.1%) seniors. The student-athletes participated in one or both of the following sports, football 100 (72.5%), basketball 16 (11.6%) or both 22 (15.9%).

Motivational levels were also measured among the student-athletes. All scores were measured on a 7 point Likert-type scale. Each form of motivation or regulation could have a total score of 21. Intrinsic Regulation had the highest mean score 18.32 ($SD = 6.22$) followed by Identified Regulation 17.41 ($SD = 3.59$), Integrated Regulation 16.91 ($SD = 3.59$), Introjected Regulation 12.81 ($SD = 4.55$), External Regulation 9.65 ($SD = 4.62$), and Non-regulation 6.44 ($SD = 4.23$). Grade Point Average (GPA) was measured on a 4.0 scale. Student athlete's mean GPA was 3.33 ($SD = .38$).

Table 4.1

Descriptive Statistics

Variables	<i>M/n (SD)</i>
	<i>M (SD)</i>
Grade Point Average	3.33 (.38)
Age	16.27 (.88)
Regulation Type	
Intrinsic	18.32 (6.22)
Integrated	16.91 (3.59)
Identified	17.41 (3.59)
Introjected	12.81 (4.55)
External	9.65 (4.62)
Non-regulation	6.44 (4.23)
Grade Classification	<i>n (%)</i>
Sophomore	42 (30.4)
Junior	49 (35.5)
Senior	47 (34.1)
Sport Type	
Football	100 (72.5)
Basketball	16 (11.6)
Both (Basketball and Football)	22 (15.9)
Ethnicity	
African American	95 (68.8)
Caucasian	39 (28.3)
Asian	1 (.7)
Hispanic	1 (.1)
Other	2 (1.4)

Correlations Among Variables

Results of the correlation analyses are presented in Table 4.2. A Pearson's product-moment correlation procedure was used to determine any correlations between variables.

Variables can have positive, negative, or no relationship to each other or another variable. Cohen (1983) indicates that correlations are considered weak if they are between .10 and .29, moderate

or medium if they are between .30 and .49, and strong if they are between .5 and 1.0. This analysis suggested only one weak relationship or association between the predictor variables and the criterion variable. Student-athletes who have higher non-regulation, or amotivation tend to have lower GPA ($r = -.26, p < .05$). In this case, the correlation was negative, which simply indicates the direction of the relationship and not the strength of the relationship (Gall, Gall, & Borg, 2007) Sport type, high school grade, intrinsic regulation, integrated regulation, identified regulation, introjected regulation, external regulation, and non-regulation were not shown to be significantly correlated to student-athlete GPAs.

Table 4.2

Correlation of Predictor and Criterion Variables

	Grade Point Average	Sport Type	High School Grade	Intrinsic Regulation	Integrated Regulation	Identified Regulation	Introjected Regulation	External Regulation	Non- Regulation
Grade Point Average	1.00								
Sport Type	-.02	1.00							
High School Grade	-.01	-.11	1.00						
Intrinsic Regulation	-.04	.26**	-.01	1.00					
Integrated Regulation	.07	.10	.00	.28**	1.00				
Identified Regulation	.01	.09	.04	.32**	.62**	1.00			
Introjected Regulation	-.03	.16*	-.08	.20**	.32**	.26**	1.00		
External Regulation	-.03	.01	.10	.08	.01	.02	.55**	1.00	
Non-Regulation	-.26**	.05	.01	-.12	-.21**	-.24**	.16*	.39**	1.00

Note: * $p < .01$, ** $p < .05$ ($n = 138$ participants)

Assumption Testing

Assumption tests were completed to examine independence of observations, normality, linearity, homoscedasticity, multicollinearity, and presence of extreme outliers for the data set. A Durbin-Watson statistic was used to test for independent observations. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.30, which is acceptable. A scatterplot showed that the assumptions of linearity and homoscedasticity were tenable and indicated normality. A probability-probability plot (p-p plot) revealed normal distribution of the residuals. This was also confirmed by a bell shaped curve around the data on a histogram. Multicollinearity was assessed through correlations, variance inflation factor, and tolerance values. All predictor variables had correlation levels lower than 0.7. A correlation of .62 was found between integrated and identified regulation. However, this does not violate the assumption of multicollinearity. Tolerance and VIF indicated acceptable levels. Introjected regulation had a tolerance level .57 which was the lowest tolerance value amongst any variable. Variance inflation factor scores were all less than 1.8 for both covariates and predictor variables, falling below the threshold of 10, suggesting multicollinearity was not an issue.

During the first analysis, the presence of two outliers was found. Case-wise diagnostics revealed these outliers had standard residual scores of -3.55 and -3.66. The cutoff for scores was positive 3.0 or negative 3.0. These two scores were removed and the analysis was run again. The second analyses did not show any outliers. Leverage points were also assessed during the second analysis and all values were below the accepted level of .2. Cook's Distance values were below 1, further indicating there were no outliers or influential points of concern.

The rationale for the removal of the two outliers from the data set is justified in this particular case. It is likely these scores were outliers as their GPA scores were 2.00 and 1.90. These two athletes may have been or were unable to participate in their sport as they may be

considered academically ineligible due to having such a low GPA. South Carolina High School League rules indicate students must have an overall passing average in each of their classes and cannot be failing a course. With such a low GPA, it is possible a student could have been failing at least one course. Further, in order to qualify for NCAA division I athletics, the lowest acceptable admissions GPA is a 2.0. While this is only one score the NCAA investigates, for the purposes of this study, it was necessary to remove these two extreme cases.

Results of the Hierarchical Regression Model

The primary research question sought to identify whether a significant relationship was present between student-athlete's cumulative high school GPA and their athletic motivation, while controlling for demographic and athletic variables. The variables were grouped into two blocks so their significance to the overall model could be assessed. The results of the hierarchical multiple regression used to identify the significance of the relationship between the variables of interest (GPA and motivational levels) are presented in Table 4.3. The control variables entered into block one of the regression explained less than 1% (.001) of the variance in GPA, and were not statistically significant $F(2, 135) = .04, p = .96$. Block two was also found to not be statistically significant to the overall model, $F(6, 129) = 2.11, p = .06$.

Table 4.3

Hierarchical Regression Model

	R ² Change	F Ratio for R ² Change	B	SE	B	t	Sig
Block 1	.001	.96					
Block 2	.09	.06					
Sport Type			.01	.05	.02	.26	.79
Grade			-.01	.04	-.02	-.22	.83
Intrinsic			-.01	.01	-.09	-.92	.36
Integrated			.01	.01	.09	.78	.44
Identified			-.01	.01	-.09	-.77	.44
Introjected			-.003	.01	-.04	-.36	.72
External			.01	.01	.12	1.12	.27
Non- Regulation			-.03	.01	-.32	-3.33	.001*

Note: * $p < .001$

The descriptive data for this study indicated a balanced student-athlete response from all three grades represented. However, despite this balance, the results suggested that student-athlete intrinsic, integrated, identified, introjected, and external motivation did not have a statistically significant influence on student-athlete's overall GPA. Non-regulation was found to be an important predictor of student-athlete's GPA. Chapter Five of this study will include a discussion about the hypotheses, similar research, limitations and challenges during this study, implications, and future research direction. Each of these areas can provide a more in-depth comprehension of the current data results and provide additional resources and reference for the body of research as they relate to student-athlete motivation and academics.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This correlational study examined the relationship between high school grade point average and student-athlete motivation of 10th-12th grade male basketball and football players. Data was collected from a sample of athletes ($n=138$) at six schools in three different counties in eastern South Carolina. As there were six different types of motivation, the present study only attempted to ascertain the strength or existence of relationships among grade point average and motivational type. There has not been research to date on high school student athletic motivation using a hierarchical regression approach with the instrumentation involved. Similar research was conducted with 11th and 12th grade students (non-athletes). However, utilizing this population with these sports and instrumentation was suggested by Pelletier and colleagues (2013) as an area that would help broaden the scope of the revised Sport Motivation Scale and the Self-Determination Theory. The present study was the first to investigate two specific high profile sports (basketball and football) and only investigate males in the high school setting. Many other studies have investigated SDT in high school athletics, but they utilized different sports, mixed genders, and analysis techniques (Solberg and Halvari, 2009; Jõesaar et al., 2011; Jõesaar et al., 2012). This study also sought to investigate motivational qualities and athletic motivation from elite high school athletes. Athletic level and gender were controlled, limiting participants to the varsity level only. The present study was the first to use the specified predictor variables (intrinsic, integrated, identified, introjected, external, and amotivation) and GPA within a hierarchical regression analysis.

Results of the Hypotheses

This research study utilized a non-experimental, hierarchical regression analysis. The study was analyzed in two blocks so an improved understanding of contributors to GPA could be

better understood. The blocks in the analyses were interrelated with the research questions and hypotheses questions. Block one (RQ1a) of the analysis investigated the relationship of sport type and grade level with motivational levels (intrinsic, integrated, identified, introjected, external, and non-regulation). This block did not provide any statistically significant contributions to the model in predicting academic performance amongst high school football or basketball male student-athletes. Considering this block was not significant there was a failure to reject the null hypothesis (H_{0a}) "There will be a no statistically significant contribution from demographic (i.e. grade) and athletic variables (i.e. sport type) to the model for predicting male student-athlete academic achievement." Despite the fact that individually non-regulation was found to have a relationship with academic achievement, the results of the entire model suggested that there was not a significant relationship between high school male student-athlete football and basketball players with academic achievement. Thus the contribution from block two was not statistically significant either causing a failure to reject hypotheses H_{0a} through H_{0g} as well.

Relationship of the Results to Research and Theory

The present study was the first to incorporate the SMS-II with a specific sample population narrowed to high school student-athletes. Other research however has suggested that the original SMS was appropriate to utilize in determining athletic motivation among athletes (Pelletier et al., 2013) though as discussed in Chapter Two, the SMS-II is the more appropriate and updated tool to use when studying athletic motivation. College students have been researched heavily and it was suggested on multiple levels that high-profile sports should be studied further (Gaston-Gayles & Hu, 2012). Student-athletes involved in team sports may have a different psychological or motivational make up than student-athletes involved in individual

sports. Additionally, research (Turkmen, 2013) has suggested utilizing or narrowing the focus to higher participation levels within the student-athlete population. Yet, within the present study, despite these recommendations, no significant findings occurred with the model in its entirety.

Other research related to SDT and athletic motivation was also consistent in the present findings regarding amotivation. Turkmen (2013) found male student-athletes who had higher amotivatioal tendencies also had lower GPA and academic motivation overall. Caution should be used when associating amotivation with an elite athlete as amotivation is not something typically part of an elite athlete's psychological profile (Feltz, 1987; MacNamara et al., 2010; Mallett & Hanrahan, 2004). The present study utilized elite athletes. However, perhaps the definition which as discussed in Chapter One is fuzzy at best needs to be better defined. Perhaps an improved classification for high school elite athletes would be those athletes in the starting line-up, or those who have achieved an all conference award. This would certainly lower the potential sample population, but it would elevate the status of elite athletes. As has been discussed, despite following recommendations for a similar age group and competitive levels, the particular athletes in this sample seemed to have a higher presence of amotivation as it related to predicting their academic achievement scores.

Conversely to Turkmen (2013), Joessar and colleagues (2011) utilized the original SMS and found their sample population of athletes had high intrinsic motivation. While they did use team sport athletes, it would be difficult to compare the present study with the referenced study as different instrumentation was utilized. The results of the present study did indicate higher mean scores for the intrinsic motivators versus the extrinsic motivators which could potentially show a link between the adolescent student-athlete populations, but further research would be needed to further develop this relationship.

When investigating the specific sports involved in the present investigation, high school basketball and football had not been researched in depth; particularly as it related to SDT and academics within this age group. Through the framework of SDT, it was thought that student-athletes involved in basketball and football would offer different motivational tendencies than participating in other sports such as recognition or rewards (Bartholomew et al., 2011). These tendencies might indicate these individuals being more motivated by external or extrinsic motivation rather than intrinsic motivation. Yet this did not seem to be the case, as the present study seemed to confirm that student-athletes in the sports of basketball and football are more concerned with the intrinsic aspect of participating in their sport. In other words, the student-athletes participate because they like the joy and satisfaction of learning or crafting their skills rather than being rewarded or recognized for excelling in their sport.

Research within the high school student population seems to have had a tendency to focus on students alone (Fortin et al., 2012; Sparks, 2011), failing to examine the fact that millions of students across the country participate in athletics as well. This athletic component certainly added an additional element to consider when investigating student-athlete achievement and their motivational levels. Typically within SDT, individuals are motivated in one of two categories, such as intrinsic or extrinsic motivation (Ryan & Deci, 2000a). In the present study, amotivation was present within a portion of the student-athletes. Care should be taken when associating elite athletes and amotivation together. Yet despite this fact, amotivation is likely to be present within the high school age group when academics are involved. Legault and colleagues (2006) investigated students with high amotivation and found them to desire high relatedness with their teachers, parents, and friends. This social structure around students is important particularly as the results within the present study indicated high amotivation in this

population. Yet with student-athletes, this social family structure is even more important as they spend not just school time together, but also their games and practices. Quality motivation from teachers, coaches, and student-athlete's caregivers should be considered. High quality motivation has been shown to improve academic success (Kusurkar et al., 2012). Research suggests that a lack of motivation precedes and predicts academic achievement. SDT theorists consider motivational orientation as a reliable and accurate predictor of success in the classroom (Deci & Ryan, 2002; Legault, Green-Demers, & Pelletier, 2006). Motivational orientation in this case is classified as intrinsic, extrinsic or amotivational tendencies. If students are trending towards low motivation or no motivation to succeed academically, their future college success could also be in jeopardy.

When investigating the results of this study, it could be easy to focus only on the area of amotivation or non-regulation due to the relationship that was present; however, the other aspects of motivation should be considered as well. SDT posits that all three levels of motivation (intrinsic, extrinsic, and amotivation) have an influence on each other (Vallerand, et al., 1997). The behavior or motivation a student exhibits can be influenced by circumstances, personality, or more broad or general domains (e.g. class schedule, athletic competition, family structure, etc.). These relations occur within the SDT system but do not exist without each other. While the present study did not investigate personality or circumstances such as socioeconomic status, certainly future research could consider these areas within the development of a motivational model.

Conclusions and Implications

The high school student-athlete population should still take a priority within educational and motivational research. There has been minimal research done on these students in the past

(Steinmayr & Spinath, 2009), perhaps due to the more stringent regulations of working with minors. Student-athletes within this age group are still forming study habits and can improve grades in order to be recruited by higher level institutions for athletics. Student-athletes are under significant pressure to succeed both in their sport and in the classroom. Vansteenkiste and colleagues (2006) suggested that perhaps athletes, due to this pressure, are more likely to have external forms of motivation. However, in the present study, more autonomous or intrinsic forms of motivation were present and had higher mean scores than the extrinsic forms of motivation.

Although there were no significant results surrounding intrinsic motivation and predicting academic achievement, this study did provide some evidence to support the fact that student-athletes with amotivational tendencies were less likely to be motivated to achieve high academic scores. Amotivation is by definition neither intrinsic nor extrinsic motivation rather it is a lack of motivation or intention to act (Ryan & Deci, 2000a). Student-athletes with high amotivation do not identify any reasons for which to continue participating or practicing their sport. If this occurs, they will likely discontinue their participation, which is not a desirable outcome as sports offer not just an opportunity for high school athletes to attain a scholarship with a college or university, but also learn leadership skills necessary to succeed in jobs after college or high school.

According to research, impersonal behaviors have been shown to undermine intrinsic motivation and encourage amotivation (Pelletier et al., 2005). This is important not only for coaches, but also for schools. Perhaps coaches need to alter their style of coaching or increase their communication with these athletes. As this study researched elite student-athletes, it is unlikely a coach would want to lose elite talent. From the school perspective, students without a

proper support structure are less likely to succeed in the classroom and may even be less likely to stay in school altogether (Klem & Connell 2004). It is conceivable that these athletes are more stressed at home, and this stress causes decreased athletic and academic performance (Bremer, 2012). Increasing coach engagement is only one focus to prevent amotivation in student-athletes. Creating a healthy supportive culture within a sports team can also help prevent amotivation; however this culture still starts with the coach. A culture where student-athletes can have increased self-esteem and encouragement from head coaches, assistant coaches, and their teammates is crucial to achieving not only athletic success, but perhaps increased academic success as well. More research focused on athletic, academic, and home life culture within sport types of basketball and football could yield more significant results within academic achievement. Allowing researchers a snapshot of a student's home life including their socioeconomic status and family structure or perception of coaches could lend more research to the area of motivation and academic achievement. Ultimately, student-athletes who have high intrinsic motivation will tend to have higher academic benefits, learning comprehension, and retention (Vansteenkiste et al., 2005) while those with lower motivational tendencies may struggle. Yet caution should be taken with these implications as this is simply a correlational research study rather than a causal comparative study. This predictive correlational study sought to examine relationships between variables, thus specific inferences cannot be made.

Limitations and Recommendations for Future Research

All studies have limitations. Limitations can provide potential ideas for future research considerations. In this present study, based on personal observation, the scope of what is considered "elite" should be called into question. While the population in this study was limited to varsity athletes, the size of some of the schools contributes to a greater number of student-

athletes participating in varsity athletics who at larger schools may participate in a lower competitive level such as junior varsity. Table 3.1 referenced in Chapter Three shows the breakdown of school sizes. While the majority of the data came from AAA schools and higher ($n= 109$), nearly a quarter of the sample came from the AA school size ($n= 29$). Competition can vary drastically between school sizes. Based on numbers and size of the schools, the probability of having more elite student-athletes should side with larger schools.

Another limitation was in the diversity of the sport type collected. Ideally, having enough surveys to investigate correlations among just basketball players, football players only, or a combination of athletes could have yielded more significant results. With nearly three quarters of the sample population playing football only ($n=100$), the results could be skewed towards their motivational style or type. Future research studies should seek to balance the types of sports along with the competitive level. In order to achieve enough statistical power, this was not possible in the present study. Furthermore, if future research contains both the sports of basketball and football, the time of data collection should be taken into consideration to maximize participation from both sports.

Additionally, the fall sport season was a factor in collecting data. As previously discussed, most of the surveys collected were from student-athletes involved in football alone. Nearly 600 consent forms were distributed at six schools in three counties and 140 came back. This 23% response rate is relatively consistent with survey research (Fowler, 2009). The timing of the survey collection was potentially difficult for other sports to be involved. There were open practices for other sports, but they were loosely scheduled and not reliable when scheduling meetings with coaches and athletes. A more longitudinal study over the course of several

months or overlapping into basketball season would have likely yielded considerably more survey responses and perhaps more balance in sport type.

Omitted variable bias was considered initially as a threat to this study, as missing variables within a study of this nature could have undue influence on dependent or criterion variables. In order to minimize this limitation, literature was reviewed thoroughly and selection of specific variables was made based on previous research and recommendations. Certainly, as was found in this study, more variables could be added. SDT research is relatively new in terms of theory and will continue to grow not only with motivational variables but with testing models and sample populations that are investigated.

The use of self-reported GPA was utilized in this study. While students were asked to verify their GPA prior to reporting it, there still seemed to be questions about which GPA to use. Students were in a variety of class types (Honors, College Prep, Dual Credit, International Baccalaureate) which all lend to a different GPA. Despite the confusion, there were no invalid GPAs reported on surveys allowing all to be included in the analyses. As this study was anonymous, students did not appear to feel any pressure while taking the study, indicating the testing environment or social desirability bias was not an issue. A school representative could have been present with the students to answer any GPA related questions if they were to arise in the future. Future studies could also ensure student-athlete GPAs were verified with school guidance records to ensure accuracy.

When collecting the surveys for analyses, each survey was inspected to ensure completion and evaluated to tally up the motivational score for each student. Errors-in-variables bias and non-response are both important considerations. Special care was taken to accurately "grade" and input data into SPSS. Further, as students turned in surveys, the survey was

reviewed to ensure both sides were completed. If a student-athlete failed to complete it, he was asked if he was simply completed or failed to answer a question by mistake. Those who did not complete the survey often did not realize there was a second side of the survey page.

Finally, as was mentioned previously correlational studies are not considered a form of causal-comparative research. The data in this particular study cannot be generalized to society as a whole. Perhaps the data collection should be replicated in another part of the country or with only urban or rural school settings. While the State Department indicates the population within the geographical area under study is evenly split among African Americans and Caucasians (both 48%), the sample population in the present study showed 69% were African American and 28% Caucasian. Future studies should attempt to find balance among student-athlete demographics, which may influence motivational aspects or GPA.

Summary

The present research study examined the relationships between six predictor variables (intrinsic, integrated, identified, introjected, extrinsic, and non-regulation) and GPA for male high school student-athlete's involved in the sports of basketball or football while controlling for gender and athletic status. Through the framework of SDT and the utilization of the SMS-II, student-athletes indicated their athletic motivation. The model as a whole was not successful in predicting academic achievement for all six predictor variables. However, non-regulation may predict academic achievement within this population. This research is important for schools and particularly teachers, counselors, or coaches who are involved in caring for student-athletes who participate in basketball or football. Student-athletes must feel connected and supported by individuals other than themselves or they may be at risk of becoming disconnected from not only their academics, but also their sport. SDT is a broad framework that offers great insight into the

psychology of students and student-athletes. Further research should continue to focus on the high school population including basketball and football as conflicting research studies have shown various levels of motivation amongst student-athletes. As athletics in the high school age group continue to grow each year, a continued focus on academics must remain a priority. The high profile nature of basketball and football in high school will continue to offer a unique focus for future research.

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APPENDIX A

Email approval regarding utilization and reproduction of the revised SMS-II

Email correspondence and permission from Dr. Pelletier. Original permission on 6/13/13 and confirmed on 1/9/15:

Dear Adam,
You have my permission to use the SMS-II in the context of your dissertation.
Best of luck with your thesis.

Luc Pelletier, Ph.D.
Ecole de Psychologie / School of Psychology
Université d'Ottawa / University of Ottawa
136 Jean Jacques Lussier (5027)
Ottawa, Ontario, Canada K1N 6N5
613.562.5800 Ext. 7503
Site Web/Website: <http://www.socialsciences.uottawa.ca/pelletiermotlab/>

Email correspondence and permission from Dr. Pelletier to reproduce the SMS-II within the dissertation:

Dear Adam,
You have my permission to reproduce the SMS-II in the appendix of your dissertation
Best regards,

Luc G. Pelletier, Ph.D.
Ecole de Psychologie / School of Psychology
Université d'Ottawa / University of Ottawa
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APPENDIX B

Revised Sport Motivation Scale (SMS-II)

Why do you practice your sport?

Please think about why you play your primary sport and respond to the questions below. Using the following scale, please indicate to what extent each of the following items corresponds to one of the reasons for which you are presently participating in your sport.

Does not correspond at all	Corresponds very little	Corresponds a little	Corresponds moderately	Corresponds quite a bit	Corresponds quite a lot	Corresponds completely
1	2	3	4	5	6	7

Why do you practice your sport...

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. Because I would feel bad about myself if I did not take the time to do it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I used to have good reasons for doing sports, but now I am asking myself if I should continue. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Because it is very interesting to learn how I can improve. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Because playing sports reflects the essence of whom I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Because people I care about would be upset with me if I didn't. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Because I found it is a good way to develop aspects of myself that I value. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Because I would not feel worthwhile if I did not. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Because I think others would disapprove of me if I did not. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Because I find it enjoyable to discover new performance strategies. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. I don't know anymore; I have the impression that I am incapable of succeeding in this sport. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- | | | | | | | | |
|--|---|---|---|---|---|---|---|
| 11. Because participating in sport is an integral part of my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. Because I have chosen this sport as a way to develop myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. It is not clear to me anymore; I don't really think my place is in sport. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Because through sport, I am living in line with my deepest principles. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. Because people around me reward me when I do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. Because I feel better about myself when I do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. Because it gives me pleasure to learn more about my sport. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. Because it is one of the best ways I have chosen to develop other aspects of myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Scoring:

Intrinsic Regulation: 3, 9, 17

Integrated Regulation: 4, 11, 14

Identified Regulation: 6, 12, 18

Introjected Regulation: 1, 7, 16

External Regulation: 5, 8, 15

Non Regulation: 2, 10, 13

Pelletier, L.G., Rocchi, M. A., Vallerand, R. J., Deci, E. L., & Ryan, R. M. (2013). Validation of the Revised Sport Motivation Scale (SMS-II). *Psychology of Sport and Exercise, 14*, 329-341.

APPENDIX C

Demographic Section of the survey

What is your ethnicity (select one)?

African American, Caucasian, Asian, Hispanic, Other

What is your age (enter number)? _____

What sport(s) do you play (circle)? BASKETBALL FOOTBALL BOTH

What is your grade (enter number 10-12)? _____

What is your GPA (enter number on 4.0 scale)? _____

Are you in College Prep classes? Yes No

Are you in Honors classes Yes No

Are you in Dual Credit/AP/IB Classes? Yes No

APPENDIX D

IRB Approval Letter

LIBERTY UNIVERSITY.

INSTITUTIONAL REVIEW BOARD

August 15, 2014

Adam Ploeg
IRB Approval 1910.081514: A Self-Determination Theory Model Investigating the
Relationship between High School Male Student-Athlete Motivation and Academic
Achievement

Dear Adam,

We are pleased to inform you that your above study has been approved by the Liberty IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054

LIBERTY
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APPENDIX E

Recruitment Script

(To be read when recruiting participants at the end of practice)

My name is Adam and I'm a doctoral student in the Education Department at Liberty University. As part of the requirements for my degree, I am conducting a research study to investigate and identify if there is a relationship between student-athlete athletic motivation and academic achievement (Grade Point Average). I'm inviting you to participate in this study.

I am recruiting participants to assist me in taking a survey. The survey will take approximately 5-10 minutes of your time and ask questions about your athletic motivation and your demographics (age, race, and sport type), class type (honors, advanced placement, dual credit, international baccalaureate, or college prep), and self-reported grade point average. This survey is completely anonymous, meaning I will not be able to identify you by the answers on your survey.

Further, you must be either a basketball or football player, be in 10th-12th grade, and participate at the varsity level.

Participation in this study is voluntary. Your decision to participate will not affect your playing status or relationship with your coaches or your team. If you decide to participate, you are free to not answer a question or withdraw at any time. If the results of the research study are published, your name and identity will not be used.

If you choose to participate in this study, you will be entered into a drawing to win one of two gift cards. One player from this school will have a choice of a \$10 Amazon gift card or iTunes gift card. In order to qualify, you must complete the survey in its entirety.

Are there any questions? (Answer Questions Here)

At this time, I will pass out consent forms for you to take to your parent or guardian to complete and return. If you choose to participate, I will need these forms completed prior to taking the survey.

APPENDIX F

Recruitment Letter to Parents/Guardians

Summer 2014

A SELF-DETERMINATION THEORY MODEL INVESTIGATING THE RELATIONSHIP BETWEEN HIGH SCHOOL MALE STUDENT-ATHLETE MOTIVATION AND ACADEMIC ACHIEVEMENT

Dear Parent or Guardian:

As a graduate student in the education department at Liberty University, I am conducting research as part of the requirements for a Doctor of Education. The purpose of my research is to investigate and identify if there is a relationship between student-athlete athletic motivation and academic achievement (grade point average), and I am writing to invite your child to participate in my study.

Participants must be male varsity basketball or football players and be in 10th-12th grade. If you are willing to allow your child to participate, he will be asked to assist me by taking a survey. The survey will take approximately 5-10 minutes of his time and ask questions about his athletic motivation, demographics (age, race, and sport type), class type (honors, advanced placement, dual credit, international baccalaureate, or college prep), and self-reported grade point average. This survey is completely anonymous, meaning I will not be able to identify him by the answers on his survey.

For your child to participate, he will be asked to complete the survey at school. The survey will be completed at the conclusion of a team workout or practice in the school computer lab or another room with access to a computer.

A consent document is attached to this letter. The consent document contains additional information about my research. If you agree to your son's participation, please sign the consent document and return it to your child's coach.

If you allow your child to participate, he will be entered into a drawing to win one of two gift cards. One player from each school will have a choice of a \$10 Amazon gift card or iTunes gift card. In order to qualify, he must complete the survey in its entirety.

Sincerely,

Adam Ploeg MS, ATC

████████████████████
████████████████████

APPENDIX G

CONSENT FORM

A Self-Determination Theory Model Investigating the Relationship between High School Male Student-Athlete Motivation and Academic Achievement

Adam Ploeg
Liberty University
Department of Education

Your student-athlete is invited to participate in a research study on the impact of sport motivation on academic achievement. Your student-athlete was selected as a possible participant because he falls within specific high school criteria. He is either a basketball or football player in 10th through 12th grade. I ask that you read this form and ask any questions before giving consent for your student-athlete to participate in this study.

This study is being conducted by Adam Ploeg, Department of Education

Background Information:

The purpose of this study is to identify if there is a relationship between student-athlete athletic motivation and academic achievement (Grade Point Average).

Procedures:

If you give consent for your student-athlete to participate in this study, he will be asked to do the following:

Complete a 5-10 minute survey about his demographics (age, race, sport) and motivation within their individual sport(s). The student-athlete will also be asked to self-report their Grade Point Average after they verify on their PowerSchool account.

Risks and Benefits of being in the Study:

This study has risks that are no more than an individual would encounter in everyday life. The survey will be completed anonymously. No student identification numbers or names will be collected.

The benefits to allowing participation in this study are significant. The results of the study will greatly enhance the ability of coaches, teachers, school administrators, and other support staff to learn how to motivate student-athletes in their academics based on their motivation in athletics. This research study would be an excellent tool and resource to assist student-athletes in the classroom.

Compensation:

Participants will be entered into a drawing to have the opportunity to win one of several prizes, which include ten \$10 Amazon gift cards or \$10 iTunes gift cards.

Confidentiality:

In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. The researchers will take precautions to protect the student-athlete's identity by allowing any links to student information. Names or student-identification numbers will not be used to ensure anonymity. Data will be stored on SharePoint, a university server. This server is password-protected and is not shared with anyone outside of the primary research team. It is conceivable that information technology employees at the university could access the site for maintenance or updating purposes. After a period of three years, information will be deleted from SharePoint and the researcher will destroy any remaining electronic copies used for data analysis.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision to give consent for your student-athlete to participate will not affect his relationship with Liberty University or his high school. If you decide to allow participation, you are free to not answer a question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Mr. Adam Ploeg. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [redacted]; aploeg@liberty.edu. you may also contact his dissertation chair with any questions: [redacted], [redacted], [redacted].

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24515 or email at irb@liberty.edu.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read and understood the above information. I have asked questions and have received answers. I give my consent for my student-athlete to participate in this study.

Student-athlete name: _____ Date: _____
(Printed)

Student-athlete name: _____ Date: _____
(Signed)

Parent/Guardian: _____ Date: _____
(Printed)

Parent/Guardian: _____ Date: _____
(Signed)

IRB Code Numbers: 1910.081514

IRB Expiration Date: 08/15/15