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UNDERSTANDING THE INFLUENCE OF THE COACH AND TEAM
RELATIONSHIPS ON SPORT MOTIVATION IN COLLEGIATE STUDENT-
ATHLETES

by

Lindsey Swanson

A Dissertation

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Abstract

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The National College Athletic Association (NCAA) reports ever-increasing numbers of students participating in collegiate sports. As the demand for and intensity of collegiate sports continue to grow, there is a need to understand the sport environment and assist in the development of environments conducive to the well-being of student-athletes. This study used the vocational and industrial-organizational theory of person-environment fit to conceptualize the collegiate sport environment as it shares numerous characteristics with a work environment. This study examined the relationships between the perceived cohesion student-athletes experience with their coaches and teammates and their motivation to perform. The impact of three moderators (athletic identity, sex, and sport type) on the cohesion – motivation relationship was also examined. Using data collected from 219 male and female collegiate student-athletes, hierarchical multiple regressions tested the effects of the perceived coach-athlete relationship and team-athlete relationship on predicting athletes' motivation to perform as well as the moderating effects of athletic identity, sex, and sport type. The athletes' perceived coach-athlete cohesion, team-athlete cohesion, and athletic identity (i.e., the degree to which an individual identifies with the athlete role) predicted the intrinsic and self-determined motivation levels of student-athletes. Athletic identity moderated the relationship between perceived team-athlete cohesion and motivation; sport type moderated the relationship between perceived coach-athlete cohesion and motivation. For student-athletes who reported a low athletic identity, perceived cohesion with their team was

more predictive of their motivation levels than it was for those who had higher athletic identity. The degree to which they perceived cohesion with coach was more strongly predictive of self-determined motivation levels for student-athletes of individual sports compared to student-athletes involved in team sports. Clinical implications of the findings and future research are discussed.

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Chapter 1

Introduction

In the United States, college sports are a popular pastime for athletes and fans alike. In 2014, almost 30 million people attended a college sporting event, with 45% of Americans following collegiate sports to some extent (“College sports,” n.d.). The National College Athletic Association (NCAA) reported a total of over 472,000 students participating in college sports during the 2013-2014 year (Johnson, 2014). Some of these students received athletic scholarships in order to participate in their sport while others received no funding, but did receive some academic support in order to be able to continue in their sport while earning their degrees.

Although the life of a student-athlete may seem highly desirable, researchers and mental health professionals have acknowledged a number of unique concerns faced by many student-athletes. Performance enhancement (Aoyagi, Portenga, Poczwardowski, Cohen, & Statler, 2012; Hays, 1995; Petrie & Diehl, 1995), team dynamics and cohesion (Holt, Knight, & Zukiwski, 2012), psychopathology (i.e., depression, anxiety, bipolar, and personality disorders) (Donohue et al., 2004; Glick, Kamm, & Morse, 2009; Reardon & Factor, 2010; Storch, Storch, Killiany, & Roberti, 2005; Ward, Sandstedt, Cox, & Beck, 2005), identity issues (Stephan & Brewer, 2007; Visek, Hurst, Maxwell, & Watson, 2008; Visek, Watson, Hurst, Maxwell, & Harris, 2010), and career development issues (Stephan, 2003; Stier, 2007; Van Raalte & Anderson, 2007; Warriner & Lavalley, 2008; Wippert & Wippert, 2008) are a small sampling of the varied issues student-athletes encounter. The number and breadth of these issues suggest that it is important to continue conducting research with student-athletes in order to understand some of their

specific concerns. This study focused on student-athletes' sense of cohesion with their teams and coaches and the relationships between that cohesion and their performance motivation.

The main goal in the world of elite sports, for athletes and coaches alike, is to perform at a high level. In an effort to aid in enhancing overall performance, research studies have explored various characteristics of athletes and coaches, such as personality (Binboga, Guven, Çatikkaş, Bayazit, & Tok, 2012; Coetzee, 2010; Gardner, 2001; Gee, Dougan, Marshall, & Dunn, 2007; Hays, 1995; Morgan, 1980), behavior and psychological factors such as motivation that promote athletic excellence (Aoyagi et al., 2012; Hays, 1995; Landers, 1995; Petrie & Diehl, 1995; Sherman & Thompson, 2001; Van Raalte & Anderson, 2007), and coaching behaviors that may influence an athlete's ability to perform at a high level (Amorose, 2007; Gillet, Vallerand, Amoura, & Baldes, 2010; Horn, Bloom, Berglund, & Packard, 2011; Pelletier, Fortier, Vallerand, & Brière, 2002).

Several studies have approached these factors by focusing solely on variables pertaining to the athlete *or* those pertaining to the coach (Coetzee, 2010; Cox, Shannon, McGuire, & McBride, 2010; Storch et al., 2005). Thus far, research has failed to incorporate the athletes' perceptions of the relationships between the coach and the athlete *and* between the athlete and the rest of the team as they relate to performance motivation for the individual athlete. These relational perceptions may explain why some athletes thrive within a particular team or coaching environment whereas others in the same environment fail to reach their perceived potential.

In addition to the lack of research exploring the athletes' perceptions of their relationships with coaches and teammates, the literature frequently addresses sport from a recreational or leisure approach (Amiot, Gaudreau, & Blanchard, 2004; Gillet, Berjot, & Gobancé, 2009; Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2007) rather than from the central role it plays in the lives of many student-athletes. There is a vast difference between recreational athletes and elite athletes.

The continuum of athletic involvement can easily be seen at universities where sport activities are differentiated into competition levels. At the lowest level, students can participate in intramural sports, often hosted by the recreational center on campus, where they may compete against other students at the university (The College Board, 2014). This offers students a healthy and enjoyable activity in which to participate without the opportunity to receive funding or scholarships for their participation. Intramural teams are formed, managed, and officiated by the students themselves.

The intermediate level of competition at universities occurs in the form of club sports. Club sports offer students the opportunity to play in a more competitive environment, competing against club teams at other nearby universities and colleges (The College Board, 2014). This level is often used to satisfy student's athletic interests while complying with Title IX regulations or beginning the development of a new varsity sport. Teams at this level often have a coach from the community assisting in the development of the team and providing direction for the team to succeed in competitions.

The highest level of university sports is varsity sports. This level differs from the two lower levels as it is governed by a national body, the NCAA, rather than each individual university (The College Board, 2014). As the level of competition increases,

and particularly in varsity sports, the athletic environment appears to more closely match that of a vocation rather than a leisure activity. For example, the expected athletic demands of student-athletes include practice, competition, traveling, weight-lifting, injury rehabilitation, media obligations, team meetings with coaching staff, and film analysis (Jolly, 2008; Ward et al., 2005). Student-athletes report regularly spending more than 30 hours each week on athletic related activities (Ward et al., 2005).

Additionally, student-athletes often have mandatory academic advising, tutoring, and study hall with schedules that are created and regulated by the coaching staff (Jolly, 2008). Some student-athletes are even subjected to “class-checkers” ensuring that student-athletes are present for their classes, with repercussions if they are not in attendance. Collegiate athletics is clearly more than a recreational activity.

As a further indication of the vocational aspects of collegiate athletics, Division I and Division II athletic programs provide in excess of \$2 billion in athletic scholarships to more than 126,000 student-athletes (“How do athletics scholarships work”, n.d.). Granted annually, these scholarships are merit-based and coaching staffs determine who receives the scholarships, how much money is received (i.e., full scholarship or partial scholarship), and what, specifically, scholarships will cover (i.e., tuition, fees, room and board, meals, etc.). Since these scholarships are merit-based, they are affected by the athlete’s performance within his or her sport. The quality of student-athletes’ athletic performance each season may determine whether the student-athlete will have his or her scholarship renewed and hence, whether the student-athlete continues at the university or potentially withdraws due to financial difficulty. This merit-based component implies that the athletic performance of the individual is as important, or perhaps more important,

than success in the classroom. This pressure to perform parallels the work world, where continued satisfactory performance is required to maintain satisfactory pay, current position within the organization, and advancement.

Person-Environment Fit

The concept of person-environment fit (P-E fit) posits that it is the interaction between the abilities and needs of an individual and the demands and supplies of the work environment that determine the level of satisfaction and happiness experienced by the individual (Edwards, Caplan, & Harrison, 1998). This interactive perspective acknowledges the complex relationship between the employee and employer. Rather than demanding that an employer or employee have a specific personality, set of skills, or interaction style, P-E fit suggests that matching those components of an individual to an employer with similar or complementary components generates a sense of congruence or fit for both the employee and employer. This congruence determines the “behavior, attitudes, and well-being” (Edwards et al., 1998, p. 2) of the employer and employee. Behaviors and attitudes frequently affected by congruence include satisfaction, commitment, and enhanced motivation and performance.

The application of P-E fit to the world of sports is especially pertinent to determining student-athletes’ motivation as it relates to performance. In developing his theory on self-determination, Deci (1975) recognized the impact of successful, congruent interactions between the individual and an individual’s environment, leading to the development of an individual’s self-determined motivation. Consistent with the P-E fit framework, an individual’s self-determined motivation is established by the extent to which his or her basic psychological needs of autonomy, competence, and relatedness are

met (Deci & Ryan, 2002). In support of the interactional component between an individual and his or her environment, Treasure, Lemyre, Kuczka, and Standage (2007) claimed that “athletes who internalize a self-determined motivation regulation and train in an autonomy-supportive environment are likely to experience adaptive outcomes such as persistence, task perseverance, and coping strategies that have been shown to be determinants of athletic development and performance” (p. 163).

The environment that student-athletes participate in varies so much by sport and division, among other factors, that it makes sense to use the P-E fit model to address the person within context. Rather than the belief that there is one specific, “perfect” athletic environment, there may be a variety of environments that are beneficial and provide a sufficient fit depending on the needs of the different student-athletes.

These evaluations of P-E fit, based on both objective and subjective components, occur from the coach or organization’s perspective as well as the athlete’s. The current study focused on the athletes’ perception of P-E fit, defined as the subjective components of sense of cohesion with the coach/coaching staff and with the team, and the relationship between that perceived cohesion and athletes’ motivation for engaging in their sport.

Sense of Cohesion

Student-athletes spend a large amount of time developing their skill under the tutelage of coaching staffs. The proximity and intensity with which athletes work with their coaches provides a unique coach-athlete relationship. Jowett and Ntoumanis (2004) developed an assessment to measure the sense of cohesion an athlete experiences in the relationship with his or her coach. This cohesion is composed of three components: closeness, commitment, and complementarity. Closeness, or “the affective bonds or

interpersonal feelings,” (Yang & Jowett, 2013, p. 282) can be characterized by “mutual trust, respect, appreciation, and liking” (Yang & Jowett, 2013, p. 282). Yang and Jowett (2013) defined commitment as the “sense of cognitive attachment coupled with intentions to maintain the relationship over time” (p. 282). Lastly, complementarity is the degree to which the athlete perceives his or her interactions with the coach to be cooperative (Yang & Jowett, 2013).

Student-athletes also spend much of their time with teammates engaging in daily activities of practicing and competing, taking courses, dining, traveling to competitions, and sometimes living together (Jolly, 2008). Given the time spent in close proximity with the team, the sense of cohesion a student-athlete has with his or her team is vital. Carron, Brawley, and Widmeyer (1998) defined team cohesion as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (p. 213). An athlete’s sense of cohesion with his or her team and coach have been linked to intrinsic motivation (Amorose & Horn, 2001; Gagné, Ryan, & Bargmann, 2003; Hollembeak & Amorose, 2005), motivational orientation (Amorose & Anderson-Butcher, 2007), self-determined motivation (Gillet et al., 2010; Riley & Smith, 2011), and athletic performance (Carron, Colman, Wheeler, & Stevens, 2002; Mullen & Copper, 1994). Across the board, these studies find that perceived cohesion is associated with higher levels of numerous factors impacting motivation and performance. However, cohesion has been assessed in these studies solely via the coach-athlete relationship or the relationship an athlete has with the team rather than understanding how each relationship, in conjunction with the other, influences motivation and performance.

Moderators of the Cohesion-Motivation Relationship

The relationship between the student-athlete's fit with a coach and team and subsequent motivation may, to some extent, be influenced by the extent to which he or she identifies with the athlete role (Stephan & Brewer, 2007; Visek et al., 2008; Visek et al., 2010). Stephan and Brewer (2007) described two components of athletic identity: public, the degree an individual is recognized and identified as an athlete by others; and private, the extent an individual defines his or her self-concept by the athlete role. In a survey of college athletes, Jolly (2008) found that almost 62% of student-athletes identified more as an athlete than a student.

Stephan and Brewer (2007) suggested that strong athletic identity might aid in enhancing performance by generating the mental toughness, motivation, and discipline necessary to withstand the intense training of athletes competing at high levels. Embracing the athletic role may provide the psychological strength necessary to handle the experiences faced in pushing physical abilities to the limits, coping with defeat, and managing the time demands required of a high level athlete. It might even compensate for a lower sense of cohesion with coaches or teammates by driving motivation regardless of the quality of the perceived fit.

Similarly, an athlete's sex has been shown to moderate the relationship between psychological variables and performance. DeFrancesco and Burke (1997) found that the influence of self-confidence on tennis performance was greater for women than for men. Hollembeak and Ambrose (2005) explored sex differences in athletes' motivation and perception of coaching behaviors. They found that men reported a lower sense of autonomy, relatedness, and intrinsic motivation, and were more likely than women to

perceive coaches as autocratic (Hollembek & Ambrose, 2005). It is possible that female athletes are attuned to connection and cohesion with their coaches and teammates and that having that cohesion will have more effect on their motivation than it does for male athletes.

The type of sport has also been observed as an important variable to consider when predicting performance. Beedie, Terry, and Lane (2000) examined sport type (i.e., team and individual) as a moderator when using psychological mood to predict performance. The coping skills and personality styles differed between team sport athletes and individual sport athletes. For example, Schurr, Ashley, and Joy (1977) determined the existence of a personality profile difference between team and individual sport athletes: Individual sport athletes were found to be less dependent, anxious, and extroverted compared to team sport athletes. Cohesion with teammates might be less strongly related to motivation for athletes in individual sports.

Thus, the current study applied the person-environment (P-E) fit theory to further understand the impact of collegiate athletes' perceived cohesion with coaches and teammates on athletes' motivational levels. Motivation is an outcome of congruence, and its role in affecting sport and exercise behavior is central in self-determination theory (Deci & Ryan, 1985). In this study, I examined whether a sense of cohesion with the coach and (separately) with the team predicts athletes' motivational levels for engaging in their sport. Secondly, I examined if the relationships between the two aspects of cohesion and motivational level are moderated by athletic identity, sex, or type of sport (team versus individual). These questions lead to the following hypotheses:

H1: Controlling for scholarship status, racial/ethnic self-designation, competition level (i.e., Division I, Division II, Division III.), number of seasons spent with coach, and years playing the sport, athletes' perceived sense of cohesion with their coaches and teams will positively predict motivational levels, such that higher levels of perceived cohesion will predict higher motivational levels.

H2: Athletic identity will moderate the relationship between cohesion and motivational level such that the relationships between cohesion with team and coach and motivational level will be stronger for athletes who express lower levels of athletic identity.

H3: Sex will moderate the relationship between cohesion and motivational level such that the relationships between cohesion with team and coach and motivational level will be stronger for women than for men.

H4: Type of sport will moderate the relationship between cohesion and motivational level such that the relationship between cohesion with team and motivational level will be stronger for athletes who are involved in a team sport.

H5: Type of sport will moderate the relationship between cohesion and motivational level such that the relationship between cohesion with coach and motivational level will be stronger for athletes who are involved in an individual sport.

Chapter 2

Literature Review

This chapter begins by acknowledging the difficulty in assessing sport performance as an outcome, justifying the use of motivation as an intermediate outcome variable. It reviews the existing literature regarding person-environment fit and self-determination theory, particularly as it relates to sport. Furthermore, this chapter examines the literature surrounding the predictor variable of cohesion defined as the athletes' perceptions of the coach-athlete relationship and team-athlete relationship, the potential moderating variables of athletic identity, sex, and type of sport, and the outcome variable of motivation.

Defining, Measuring, and Predicting Athletic Performance

Research on factors predictive of athletic performance has focused on various characteristics of coaches and athletes (i.e., coaching style, personality traits, coping skills, and psychological skills). In 1993, Renger described several problems researchers face when attempting to determine factors that will predict the degree of success for athletes. Renger asserted that some studies failed to incorporate a theory, while those that did failed to “adopt an interactional model” (p. 262), provide a rationale for the factors that were examined, or acknowledge the significance of both psychological and physiological factors. Methodological concerns were also present, as researchers did not appropriately operationalize variables for accurate measurement, understanding, and data analysis. Additionally, athletic performance is a complex concept, having both subjective and objective components. It can vary between sports, playing level, and a player's position within a sport. Due to this fluidity and complexity, athletic performance has

been defined and measured in a variety of ways throughout research studies with the various methods having both advantages and disadvantages.

Cox et al. (2010) examined the subjective athletic performance of student-athletes measured by totaling the athlete's perception of his or her own performance and the athlete's perception of how his or her coach might rank the athlete. This subjective measurement allows for each individual's definition of success to be assessed and can take into account the differences between sports and positions so as to assess more than one sport. However, this subjective component only takes into account the individual's view on his or her performance and lacks a standard for a "good" or "poor" performance. The lack of consistency makes it challenging to generalize or compare athletic performance across athletes.

Other studies have attempted to define athletic performance more objectively. Gee, Marshall, and King (2010) defined performance as the total number of goals, assists, and overall points scored by professional hockey players. This allowed for a standard to compare across athletes over the 15-year longitudinal study. This method provided a clear understanding of the success of athletic performance, although Gee et al. may have underestimated the differences between player positions, as there are both offensive and defensive specialists with different skill sets and responsibilities during a hockey game. In other words, optimal performance may vary between positions and may not have been fully assessed by the researchers' measurement of athletic performance.

Gillet et al. (2010) chose to determine an athlete's performance based on the athlete's final ranking upon completion of a single competition. This method appears to be examining a situational performance rather than accounting for an athlete's entire

season or career. Therefore, the single performance may or may not be a true representation of the athlete's overall performance. Similarly, Gyomber, Lenart, and Kovacs (2013) defined performance by the highest level (i.e., international ranking, national ranking, or other) achieved over the past year of play. This measurement takes into account performances over the course of an entire season and the ranking system allows outside experts to judge the athlete's performance making it quite comparable across athletes. However, this may be an inaccurate measurement of team sports where the team performance is being ranked rather than that of the individual players making up the team.

Noticing the complexity of measuring athletic performance, some researchers have chosen to explore other factors related to competition and athletic performance. Rather than determine if there was a relationship between personality and performance, Binboga et al. (2012) examined the relationship between personality traits and two factors related to performance: psychophysiological arousal and cognitive anxiety. This allowed the researchers to examine constructs that were more easily measured (i.e., psychophysiological arousal and cognitive anxiety) and therefore more broadly applied to all athletes.

Similarly, Laborde, Brüll, Weber, and Anders (2011) examined the influence of emotional intelligence on 30 male handball players' ability to cope with competition stress rather than examining athletic performance directly. This choice acknowledged the well-established relationship between stress and performance and provided an easier method for measuring the outcome variable. Through measuring this intermediate outcome variable, Laborde et al. can use the results of the study in support of the impact

of emotional intelligence on performance via the intermediate variable of competition stress.

Petrie and Diehl (1995) surveyed 489 psychologists working within the field of sport psychology and reported themes of “lack of competitive focus, motivational problems, performance anxiety, and confidence” (Petrie & Diehl, 1995, p. 289) when psychologists discussed performance enhancement issues. This suggests that there are many intermediary factors, which may be more easily measured than athletic performance, that ultimately impact performance.

In summary, subjective measures of athletic performance only acknowledge an individual’s perceptions of how well an athlete has performed and do not allow for a standard from which to judge the performance. This can lead to the perception of athletic performance varying for each individual judging the performance. Furthermore, the baseline to which an individual compares the specific athletic performance can vary for a given individual due to external variables such as the individual’s mood or having watched another athletic performance prior to the specific athletic performance to be judged. On the other hand, objective measures may not take into account all factors deemed necessary to be considered a successful athlete. For example, statistical data from sporting events may be assigned subjectively, may fail to take into account the different roles players have on a team, and may not be adequately compared across players or sports. Due to these disadvantages and the recognition of intermediate factors strongly associated with performance by researchers, this study did not assess for athletic performance, but the plausible precursor of motivation. Motivation is a variable that is

more completely in the athlete's control and not as affected by external variables (e.g., playing time, sport official error, playing conditions, ability of opponent, etc.).

Motivation and Self-Determination Theory

Developed by Deci and Ryan (2002), self-determination theory (SDT) focuses on the varying degrees of human motivation. SDT provides a broad framework of human motivation and is made up of several "mini" theories. Deci and Ryan postulated that human motivation is determined by individuals based on the fulfillment of three basic psychological needs: feelings of autonomy, competence, and relatedness. The degree to which these needs are satisfied indicates the degree to which an individual's motivation is self-determined. Deci and Ryan described the need for autonomy as one in which individuals perceive some degree of independence or control in regards to choosing their behavior. Feelings of competence occur when someone feels capable of interacting within their environment (Deci & Ryan, 2002). Lastly, the need for relatedness is a basic need for individuals to interact with others and experience a sense of being connected (Deci & Ryan, 2002).

The three basic needs all indicate some type of relationship or interaction with the environment surrounding the individual. Deci (1975) suggested a bidirectional relationship between an individual's environment and an individual's self-determination such that they each influence one another. This emphasis on successful interactions and reducing incongruity between the satisfaction of an individual's needs and his or her environment is similar to the concept of P-E fit that is described in greater detail in the next section. Sport environments vary in the degree to which they provide the three basic components, just as individuals vary in their desire to have all of their needs met in a

specific environment. Frederick-Recascino (2002) argued that creating an environment conducive to intrinsic motivation is of particular importance within the world of sports and that might entail examining the perceptions of the athletes' fit with the environment.

Types of motivation. Ryan and Deci (2007) differentiated human motivation into three main types of motivation: intrinsic, extrinsic, and amotivation. Amotivation occurs when the basic needs are not met at all and results in individuals lacking in motivation to engage in the necessary behaviors for the task at hand. Individuals who are motivated either intrinsically or extrinsically will engage in the necessary behaviors for the task, though they will be doing so for different reasons.

Extrinsic motivation is concerned with the motivating factors that are present within the environment, outside of the individual. As there are numerous external factors (i.e., rewards and punishments) that may motivate an individual to perform, Ryan and Deci (2002) further differentiated this type of motivation into four categories: external regulation, introjected regulation, identified regulation, and integrated regulation. External regulation refers to engaging in behaviors in order to avoid punishment or to gain a reward while introjected regulation is concerned with avoiding disapproval or gaining approval that is reinforced externally (Ryan & Deci, 2007). The last two are more autonomous, with less involvement from external factors. Identified regulation is associated with engaging in an activity based on morals or values that have been internalized whereas integrated regulation includes behaviors that have become integrated into the individual's sense of self (Ryan & Deci, 2007).

A person who is intrinsically motivated is someone who engages in activities simply for the joy and pleasure of engaging in the activity. Intrinsic motivation is often

“associated with feelings of satisfaction, enjoyment, competence, and the desire to persist at the activity” (Frederick-Recascino, 2002, p. 279). This type of motivation is particularly important for engaging in challenging and draining activities such as those necessary to perform at the elite level in sports, which often involve making sacrifices and pushing the body to its physical limits. These behaviors are those that are the most likely to produce a successful performance. Therefore, the higher the level of intrinsic motivation, the more likely an individual is to engage in behaviors that increase the odds of having a successful performance.

Treasure et al. (2007) investigated the application of SDT to elite level sport and determined that elite athletes have several motives, including both intrinsic motives (i.e., love of the sport, enjoyment, and relationships with coaches and teammates) and extrinsic motives (i.e., financial pay, endorsements, and fame). Though the two motivations seem to be incongruent, Treasure et al. (2007) argued that motivation that is self-determined (i.e., motivation that is internalized and integrated) is crucial for elite athletes and should be cultivated. The authors recognized intrinsic motivation and integrated regulation as the self-determined motivations most experienced by elite athletes, though Pelletier et al. (1995) also acknowledged the extrinsic form of identified regulation as a self-determined motivation. Self-determined motivation can optimize positive outcomes (i.e., winning competitions or achieving goals) that bolster against the negative components of training and competing at the elite level (Treasure et al., 2007). Furthermore, Treasure et al. claimed that the attainment of a flow state, in which athletes experience an intensified focus and often describe time as slowing down, may be aided by a higher degree of self-determined motivation, which in turn facilitates athletic performance.

Motivation and performance. The intuitive relationship between intrinsic motivation and performance has prompted many researchers to explore this relationship in more depth. As discussed previously, the numerous challenges in measuring performance have lead researchers to investigate the impact of motivation on several outcome variables such as coping skills and emotional adjustment in addition to objective or subjective performance.

In their 2002 study, Pelletier et al. attempted to understand the role of self-determined motivation as both an outcome of coach-athlete interactions and a predictor of athletic behavior. First, the researchers assessed the influence of an athlete's perceptions of coaches' interpersonal behaviors on different forms of motivation to practice competitive sport. Second, they examined the combined impact of athletes' perceptions and forms of motivation on the athletes' persistence in practice over time.

Using the Sport Motivation Scale, dropout rate, and a scale adapted from Pelletier, Tuson, and Haddad (1997), Pelletier et al. (2002) assessed 174 male and 195 female athletes ranging from 13 to 22 years of age. The first analysis compared persistent athletes ($n = 194$) to those who dropped out ($n = 175$). The results indicated that the athletes who dropped out of training had significantly lower levels of intrinsic motivation, identified regulation motivation, and perceived autonomy support. Additionally, those same athletes scored higher on amotivation and perceived controlling behaviors from coach. These results provide support for differences in motivation between athletes who persist at their sport and those who dropout. Further understanding of the relationship between coaching behaviors, motivation, and whether an athlete drops

out or not is necessary to determine the direction of the relationship and which factors are most significant in predicting the persistence of the athlete.

The second analysis Pelletier et al. (2002) conducted involved structural equation modeling to further understand the predictive quality of coaching behaviors and self-determined motivation on persistence. The researchers found that perceptions of autonomy-supportive coaching behaviors were significant positive predictors of intrinsic motivation and identified regulation. Conversely, athletes' perceptions of controlling behaviors from coach were significant positive predictors of external regulation and amotivation. Oddly, both perceptions of autonomy-supportive and controlling behaviors were significant positive predictors of introjected regulation. These results highlight the influence that coaching behaviors have on athletes' motivation levels and types. Furthermore, coaches can change their behaviors in order to facilitate motivation types that are more desirable. Coaching behaviors may also affect the athlete's sense of cohesion with the coach.

The path analysis also indicated that several types of motivation were significant predictors of persistence at Time 1 and Time 2. Intrinsic motivation was a positive predictor of persistence at both Time 1 and Time 2, as was identified regulation. A noteworthy result of this path analysis was amotivation as a significant negative predictor of persistence at Time 1 and Time 2. This clear differentiation of the impact of intrinsic motivation and amotivation is instrumental in providing support for the importance of motivation on activities such as persistence that can have a large impact on producing successful performance. Therefore, the findings suggest that coaches can create environments in which some athletes thrive, but in which other athletes might not.

Gillet et al. (2009) examined the reciprocal relationship between performance influenced and self-determined motivation. The researchers conducted a longitudinal study with 90 tennis players, aged 13-14, over the course of three years. All athletes completed the Sport Motivation Scale as a baseline, and then again two years later. They completed the Basic Psychological Needs in Sport Scale at the second data collection. Sport performance was determined objectively by looking at three consecutive seasons and using the ratio between the number of victories and number of matches played.

Preliminary correlational results indicated significant relationships between self-determined motivation, defined as the composite score of all Sport Motivation Scale subscales, and tennis performance at both measurement periods. Gillet et al. (2009) conducted a structural equation modeling analysis to further examine the relationship between self-determined motivation, performance, and the basic psychological needs. The results from this study suggest a reciprocal relationship between self-determined motivation and performance such that self-determined motivation facilitates performance, which further enhances self-determined motivation. Although self-determination theory includes the importance of athletes' perceptions that their three basic needs are met in the environment, SDT's definition of person-environment fit is limited to those basic needs. However, there might be other aspects of person-environment fit that go beyond meeting those three needs.

Person-Environment Fit

Basic concepts. Person-environment (P-E) fit theory was first developed in vocational and industrial-organizational psychology to help understand and explain how characteristics of individuals and their work environments jointly affect worker well-

being and work performance. This concept contains three main components: the personal qualities or traits of the individual, the qualities and factors of the environment, and the interaction between the individual and environment (Lofquist & Dawis, 1969). Of these three components, it is the interactive component of P-E fit that is most unique and important. It incorporates both the personal and environmental factors that determine the degree to which the worker experiences a good fit, and ultimately how happy and satisfied the worker becomes (Juntunen & Even, 2012). Dawis and Lofquist (1984) acknowledged that this interaction between the individual and the work environment is maintained as long as each continues to meet the other's requirements. This degree of fit is termed correspondence (Dawis & Lofquist, 1984).

According to Lofquist and Dawis (1969), "correspondence can be described in terms of the individual fulfilling the requirements of the work environment, and the work environment fulfilling the requirements of the individual" (p. 45). If the environment fulfills the requirements of the individual, then that individual will experience satisfaction. Conversely, if the individual fulfills the needs of the environment, then the individual is deemed satisfactory by the job or organization (Lofquist & Dawis, 1969). Lofquist and Dawis suggested that there is an innate drive in all individuals to find, maintain, and maximize the correspondence experienced with the surrounding environment.

When there is a poor fit between the individual and the work environment, stress and dissatisfaction arise from the discorrespondence (Edwards et al., 1998). In order to maintain an acceptable degree of correspondence, individuals respond either actively

(i.e., make changes in the environment) or reactively (i.e., make changes to self) when they experience discordance (Dawis & Lofquist, 1984).

Lofquist and Dawis (1969) suggested that correspondence may be used as a predictor of worker satisfaction. Edwards et al. (1998) also recognized the far-reaching effects of the interaction between the person and environment stating that it “indicates that behavior, attitudes, and well-being are determined jointly by the person and environment” (p. 2). This implies that the degree to which individuals experience goodness of fit can impact their motivation level, the behaviors in which they engage, and ultimately their level of performance.

P-E fit and outcomes. The influence of P-E fit on various outcomes has been extensively studied. In an attempt to summarize the literature on P-E fit and its impact on work outcomes, Kristof-Brown, Zimmerman, and Johnson (2005) conducted a meta-analysis on all studies involving some form of P-E fit. They found four different types of P-E fit used in the literature and numerous outcome variables examined in the 172 studies reviewed. Of particular interest for the current study, Kristof-Brown et al. found all forms of P-E fit to be positively correlated with satisfaction, commitment, and performance. Some of these studies will be described in further detail below, along with more recent studies that also examined the influence of P-E fit on motivation.

Vancouver and Schmitt (1991) conducted a study assessing the relationship between P-E fit and satisfaction, as well as the relationship between P-E fit and commitment. As fit is often considered a multidimensional concept, the researchers set out to examine two areas of P-E fit: the fit between hierarchical positions (i.e., supervisor-subordinate goal congruence) and the fit between members in the group (i.e.,

member-constituency goal congruence). Vancouver and Schmitt examined 356 principals and 14,721 teachers at over 360 junior high schools and high schools.

The results of the study indicated that the supervisor-subordinate goal congruence and member-constituency goal congruence were positively correlated to satisfaction and commitment. Additionally, the correlations for supervisor-subordinate goal congruence and both satisfaction and commitment decreased significantly when accounting for the member-constituency goal congruence. Although there was a decrease in the correlations for member-constituency goal congruence when accounting for supervisor-subordinate goal congruence, it was slight and non-significant.

Though there may be differences between school organizations and sports teams, this study parallels the current study as it assesses two areas of P-E fit as they relate to satisfaction and commitment, two outcome variables necessary for successful performance. The supervisor-subordinate goal congruence concept is quite similar to that of the coach-athlete relationship, while the member-constituency goal congruence parallels the group cohesion experienced in the team-athlete relationship.

Resick, Baltes, and Shantz (2007) examined the relationship between three components of P-E fit (i.e., person-organization fit, needs-supplies fit, and demand-ability fit) and satisfaction. Almost 300 interns of a manufacturing company were assessed and a multiple regression analysis was conducted. All three components of P-E fit were positively correlated to satisfaction suggesting that satisfaction is indeed an outcome of P-E fit.

Other studies also found a relationship between P-E fit and satisfaction. Ton and Hansen (2001) examined both satisfaction and motivation in participants' work and

marriage based on the degree of fit experienced within each of those environments. The results from a total of 181 married, full-time workers were analyzed via a path analysis. The researchers found that work interests and congruence were significantly related to work satisfaction, which was significantly related to work motivation. Similarly, marital interests and values were significantly related to marital satisfaction, which was significantly related to life happiness and marital motivation (Ton & Hansen, 2001). This supports the P-E fit belief that congruence aids in the development of satisfaction which generates motivation in an individual. Furthermore, this study paved the way for P-E fit to be used to understand non-work environments.

In 2012, Rehfuss, Gambrell, and Meyer surveyed 464 masters and doctoral level counselors with the intent of further understanding the relationship between P-E fit and career satisfaction. They found that 52% of the variance of career satisfaction was explained by overall P-E fit. Similarly, Lyons and O'Brien (2006) found that perceived P-E fit explained 43.2% of variance in job satisfaction for 204 African American workers. Taken together, these studies suggest a consistent link between P-E fit and satisfaction and one that can be used across a diverse population.

Two other studies examined satisfaction as an outcome of P-E fit, however these two studies also included a measurement of performance. In one investigation, Caldwell and O'Reilly (1990) examined the relationship between P-E fit and performance (as determined by ratings completed by others) in nine engineering managers and 14 finance managers. The researchers found that P-E fit was positively correlated with performance for both engineering and finance managers.

A second investigation conducted by Caldwell and O'Reilly (1990) involved assessing the relationship between P-E fit and two outcome measures: intrinsic job satisfaction and physical stress symptoms. Fourteen secretaries participated in the study resulting in a positive significant correlation between P-E fit and intrinsic job satisfaction and a significant negative correlation between P-E fit and physical stress symptoms.

Similar to the Vancouver and Schmitt (1991) study, Ostroff (1992) examined P-E fit within the school system. Ostroff explored the relationship between employee satisfaction and organizational performance in almost 300 schools. The results of this correlational study indicated a positive significant relationship between satisfaction and several performance outcome variables, such as academic performance on math, reading, social science, and percentage that passed, as well as administrative performance.

Application to sports. As noted earlier, the world of college athletics parallels the world of work. Both are focused on producing a successful outcome, invest heavily in keeping up with market demands and competing organizations, and have a large labor supply vying for a select number of positions. Student-athletes become workers, whereas collegiate sport teams become companies or organizations.

The financial aspect involved in college athletics furthers this comparison. The NCAA's total annual revenue from college sports is \$10.6 billion; \$5.6 billion of which is generated from ticket sales alone ("NCAA college athletics statistics," 2014). About 60% of this revenue is distributed back to the schools ("NCAA college athletics statistics," 2014). Sports teams not only generate revenue for NCAA, but also directly for their respective schools. Men's football and men's basketball, the top revenue-producing sports for schools, average annual revenues of \$15.8 million and \$10.1 million

respectively, with top football teams generating more than \$90 million (“NCAA college athletics statistics,” 2014). The large amounts of money produced by successful athletic departments, which often supplement the university’s budget, and the intense pressure experienced by head coaches, intensifies the necessity for teams and athletes to perform consistently at high levels.

Therefore, the concept of P-E fit is a natural way of understanding college athletics. Lofquist and Dawis (1969) acknowledged the diverse populations and settings to which this concept can be applied. By increasing the goodness of fit, athletes’ motivation, attitudes, and behavior could be shaped to increase the probability of successful athletic performance. Carron and Chelladurai (1981) acknowledged the importance of having a good P-E fit stating that “sport environments characterized by coach-athlete compatibility and team cohesiveness are most likely to lead to athlete satisfaction and effective performance” (p. 128).

Coach-Athlete Relationship

Intuitively, the relationship that develops between a coach and an athlete can have a large impact on the development of the athlete. The coach’s role covers many aspects: management of the game and practice, teaching athletic skills, ensuring proper physical development, and mentoring and encouraging athletes. The impact of coaching behaviors and coach-athlete interactions have been extensively researched, most notably within youth sports focusing on the positive development and well-being of young athletes (Dubois, 1981; Ledochowski, Unterrainer, Ruedl, Schnitzer, & Kopp, 2012; Smith, Smoll, & Curtis, 1979; Vella, Oades, & Crowe, 2013). These studies have collectively supported the importance of coaches engaging in autonomy-supportive

behaviors, rather than controlling behaviors, to positively impact an athlete's satisfaction and motivation to participate.

In order to examine the impact of the coach-athlete relationship, researchers must first be able to understand and conceptualize this unique relationship. Some researchers systematically explored the coach-athlete relationship through qualitative studies. Jowett and Cockerill (2003) interviewed 12 former Olympic athlete medalists as they explored the nature of the coach-athlete relationship. After categorizing the themes expressed by the athletes, Jowett and Cockerill found that athletes placed more emphasis on the closeness (34.9%) and complementarity (31.8%) components of the coach-athlete relationship than on the co-orientation (later renamed commitment) component (17.4%). Within the closeness category, two second-order themes emerged: the generic (i.e., respect, belief, and commitment) and personal (i.e., intimacy, liking, and trust) components of having a close relationship. The most frequently cited component for closeness in the coach-athlete relationship was the coach's belief in or commitment to an athlete. The complementarity category had second-order themes of cooperative behaviors and helping transactions while the co-orientation category had second-order themes of shared knowledge and understanding. The information gathered from these elite athletes suggested the importance of a connection between the coach and the athlete, particularly a perceived investment on the coach's part in the athlete and his or her abilities.

Greenleaf, Gould, and Dieffenbach (2001) also interviewed elite Olympic athletes, focusing on what factors impacted, both positively and negatively, the athletic performance. Greenleaf et al. hoped to understand the differences in those performance

factors that differentiate between athletes who met or exceeded their performance expectations from those who failed to meet their potential. The study interviewed 15 former United States Olympic athletes, eight of whom met or exceeded their performance expectations.

As athletic performances are highly individualized and complex, there are many factors that were categorized by the researchers. Greenleaf et al. (2001) discovered nine positive factors, ranging from psychological factors and physical preparation to coaching, Olympic housing, and excitement; and 15 negative factors, ranging from jet lag and officials to injury, coach issues, and media distractions. The differences found by Greenleaf et al. between those who reached their potential and those who did not are relevant to the current study. For those athletes who met or exceeded their performance expectation, three positive factors were mentioned: attitude, team unity, and Olympic housing. Conversely, the Olympic athletes who failed to meet their performance expectations labeled four factors as having the most impact: team selection, coach issues, lack of support, and team issues. It is important to note that six of the seven athletes who failed to meet their potential specified coach issues as being a crucial factor. Though the coach-athlete relationship may not guarantee the athlete to reach their potential, these results suggest that a poor relationship will negatively impact an athlete's athletic performance.

Coach-athlete relationship and motivation. More recently, researchers have explored the influence of the coach-athlete relationship on athletic performance and motivation. Mageau and Vallerand (2003) posited that the “quality of this [coach-athlete] relationship is a crucial determinant of athletes' satisfaction, motivation, and improved

performance” (p. 884). In their early review of this literature, Mageau and Vallerand found support for an increase in an athlete’s self-determined motivation as athletes perceive their coaches to be caring and involved, but they did not specifically address cohesion with the coach. Additionally, some studies they examined reported a relationship between a coach’s negative expectations, decreased motivation, and decreased performance.

Gagné et al. (2003) assessed the fluctuations in support and motivation within 33 gymnasts ranging in age from 7-18. Gagné et al. used several measures (i.e., self-regulation for gymnastics, children’s perception of parents scale, motivation for gymnastics, positive and negative affect schedule, self-esteem, subjective vitality, and need satisfaction scale), attendance, and diaries to further understand the impact of the day-to-day changes in support and motivation experienced by the gymnasts. The researchers found that an athlete’s perception of coach involvement or support was positively related to both identified and intrinsic motivation, and negatively related to amotivation. The positive relationship between an athlete’s perception of a coach’s involvement and the athlete’s identified and intrinsic motivation support the argument that motivation is an appropriate intermediate outcome variable to assess rather than performance.

Just as Gagné et al. (2003) examined the connection between coaches’ involvement and athletes’ motivation, Amorose and Horn (2001) were also interested in changes in athletes’ motivation. They investigated whether coaching behaviors or scholarship status produced changes in a collegiate athlete’s intrinsic motivation over the course of the year. This study examined 72 first-year collegiate athletes participating in

softball, swimming, track and field, or wrestling. Of the participants, 2 were on a full scholarship, 30 had partial scholarships, and the remaining 40 received no scholarships. All athletes completed the Intrinsic Motivation Inventory in the preseason and then again in the postseason along with the Leadership Scale for Sports.

The results of the repeated measures MANOVA indicated no significant main or interaction effects for scholarship by time, but there was a significant overall multivariate relationship for perceived coaching behavior on intrinsic motivation. Further analysis indicated that 11.8% of the variance in intrinsic motivation was accounted for by perceived coaching behaviors. Understanding that a unique and complex nature of intrinsic motivation exists for each individual, these results provide support for the importance of a coach engaging in behaviors that are conducive for improving, rather than damaging, an athlete's intrinsic motivation.

In 2005, Hollembeak and Amorose conducted a study of 280 NCAA Division I collegiate athletes with the purpose of distinguishing which coaching behaviors negatively and positively impact athletes' motivation. The researchers also explored whether the relationship between coaches' behaviors and athletes' intrinsic motivation was mediated by the athletes' perceived competence, autonomy, and feelings of relatedness to their coach. The large sample of collegiate athletes participated in a variety of sports, including both individual and team sports, and offered a generalizable sample of 146 male and 134 female athletes. Hollembeak and Amorose surveyed all athletes during the fall semester, meaning that some sports were not in season and some athletes new to the team were asked to use their coach from their "most recent full season of participation" (p. 26).

Hollebeak and Amorose (2005) tested a mediation model using structural equation modeling. In this model, training and instruction coaching behaviors, autocratic behaviors, and democratic behaviors were significantly correlated with autonomy. Positive feedback was negatively related to perceived competence and positively related to relatedness. Lastly, autocratic behavior was negatively correlated to relatedness. Each of the three self-determined needs (perceived competence, autonomy, and relatedness) was positively correlated to intrinsic motivation. Their model provided support for the mediation of the coaching behavior – intrinsic motivation relationship by the self-determined need. More specifically, “coaching behaviors were significant predictors of Relatedness and, in turn, Relatedness was found to be a significant predictor of IM [intrinsic motivation]” (Hollebeak & Amorose, 2005, p. 34). This suggests an importance of attending to the relationship and the ability of an athlete to relate to his or her coach as it heavily impacts the intrinsic motivation of the athlete.

Amorose and Anderson-Butcher (2007) were also interested in the possibility of mediating effects on the relationship between coaches’ behaviors, specifically autonomy support, and an athlete’s motivation orientation. They examined the autonomy support perceived by athletes and its impact on athletes’ motivation orientation, which was believed to be mediated by the three needs identified within self-determination theory: competence, autonomy, and relatedness. A sample of 581 athletes, of which 335 were in high school and 246 were in college, completed the Sport Climate Questionnaire, Sport Motivation Scale, the sport-oriented version of Feelings of Relatedness Scale, and scales developed to assess competence and autonomy.

Using structural equation modeling, Amorose and Anderson-Butcher (2007) found significant relationships between perceived autonomy support from coach and the athlete's perception of the three self-determined needs, all of which significantly predicted the athletes' motivational orientations. The researchers found that "the direct effect of the needs and the indirect effect of autonomy support accounted for 45% of the variance...in the athletes' motivational orientation" (Amorose & Anderson-Butcher, 2007, p. 664).

In 2011, Riley and Smith focused on the importance of relationships within the sport context by examining the association between self-determined motivation for sport and the relationships athletes develop with their coach and peers. They surveyed 211 basketball players between the ages of 12 and 15 to measure the athletes' perception of their coach-athlete relationship, peer acceptance, friendship quality, autonomy, competence, relatedness, and self-determined motivation. Various scales were used including the Coach-Athlete Relationship Questionnaire and the Sport Motivation Scale.

Riley and Smith (2011) determined that the coach-athlete and peer relationships significantly predicted athletes' self-determined motivation. Furthermore, the relationship between the coach-athlete relationship and self-determined motivation was fully mediated by competence and partially mediated by autonomy and relatedness. These results provided modest support for the three self-determined needs mediating the association between relationships and motivation. The significant prediction of athletes' self-determined motivation via the coach-athlete relationships and peer relationships stresses the importance of continuing to examine the relationships found in sporting contexts as they are crucial in aiding or diminishing an athlete's self-determined

motivation. The current study furthered the understanding of the connection between motivation and perceptions of coach-athlete and team-athlete relationships by investigating this relationship in collegiate student-athletes rather than middle and high school student-athletes.

Collectively, these studies highlight the importance of effective coach-athlete relationships, particularly as they relate to aiding an athlete's motivation and athletic performance. Each study generated results consistent with the hypothesis that the quality of the coach-athlete relationship can either positively or negatively impact an athlete's motivational level or orientation. Additionally, certain studies (e.g., Gagné et al., 2003; Greenleaf et al., 2001) furthered the link between the coach-athlete relationship, an athlete's motivation, and his or her athletic performance. This more complete understanding of the complex association from the coach-athlete relationship to athlete motivation to athletic performance is crucial for generating any change within the coach-athlete relationship in an effort to ultimately influence athletic performance. However, the majority of these studies fail to take into account the influence of the athlete's perceived cohesion with teammates and none of the studies investigated the moderators (i.e., athletic identity, sex, and sport type) examined in the current study.

Team-Athlete Relationship and Cohesion

Just as the relationship between coach and athlete is an important factor in an athlete's level of motivation and performance, so is the sense of cohesion with teammates. Again, it is a common-sense belief that the more cohesive a team, the better the team will perform as they will all be working in unison towards a goal and not spending time managing (or not managing) conflicts. It is this belief that leads many

teams and coaches to spend time and energy on team building exercises, particularly at the beginning of the season. Each team, by the nature of having various players, coaching personnel, leadership styles, and goals, is unique in the working environment and development of cohesion.

The team cohesion – performance relationship. Over the years, researchers have attempted to further their understanding of the relationship between cohesion and performance with mixed results. Some of the difficulties experienced by researchers have been the directional or causal nature of the cohesion – performance relationship (i.e., does cohesion cause good performance or does good performance generate cohesion), the differences between team sports versus individual sports (to be discussed in more depth later), and operationalizing the performance outcome variable. Researchers have conducted two meta-analyses in an attempt to consolidate the massive amount of literature surrounding the cohesion-performance relationship.

Mullen and Copper (1994) conducted the first meta-analysis examining the relationship between group cohesiveness and performance, reviewing a total of 200 studies. Of these studies, 49 met the selection criteria of the researchers. Statistical analysis of the literature revealed a small significant cohesiveness – performance effect. The results of the meta-analysis are crucial, as some individual studies have found a negative relationship between cohesion and performance, others have found a positive relationship, and still others have found no relationship. These meta-analysis results indicate that this intuitive relationship between cohesion and performance does indeed exist.

The most significant finding of Mullen and Copper's (1994) meta-analysis is the differences in the cohesion-performance relationship among four specific types of groups: artificial, real, military, and sport. The cohesion – performance relationship in artificial groups was quite small ($\bar{Z}_{Fisher} = .157, \bar{r} = .156$), increasing slightly with real groups ($\bar{Z}_{Fisher} = .201, \bar{r} = .198$). Studies investigating military groups found a slightly larger cohesion – performance effect ($\bar{Z}_{Fisher} = .233, \bar{r} = .229$). However, the strongest cohesion – performance relationship was found in studies using sport teams as samples ($\bar{Z}_{Fisher} = .600, \bar{r} = .537$). This large increase in effect suggested that cohesion in sport teams has a larger impact on performance than it does for other types of groups such as military or artificially created groups. Furthermore, this finding suggests the possibility that the small cohesion – performance relationship found with the large meta-analysis may not be an accurate representation of the cohesion – performance relationship within the world of sports.

Lastly, Mullen and Copper (1994) examined the relationship direction between cohesion and performance to determine if cohesion predicted performance or if performance predicted cohesion. Their analysis found that cohesiveness at Time 1 is a significant, positive predictor of performance at Time 2 ($\bar{r} = .246$), but performance at Time 1 was a stronger predictor of cohesion at Time 2 ($\bar{r} = .505$). This provides support for a bidirectional impact of cohesion and performance. In other words, cohesion impacts performance and performance influences cohesion. This supports the common belief within sports that athletes enjoy winning and are therefore more cohesive, satisfied, and motivated when they are performing well rather than when they are performing poorly.

Whereas the Mullen and Copper (1994) meta-analysis reviewed all studies involving group cohesion regardless of the group type, Carron et al. (2002) conducted a meta-analysis on the cohesion – performance relationship within sport. Their searches lead them to 55 studies, of which 46 were included in the analysis. After coding and analyzing the studies, Carron et al. (2002) found evidence to support the larger cohesion – performance relationship found in sport teams by Mullen and Copper. The total population of effect sizes within the meta-analysis generated an effect size of .690 ($p = .02$) and the average effect size from individual studies produced an effect size of .655 ($p = .03$). This support of the cohesion – performance relationship in sport further indicates the importance of acknowledging how cohesion can increase or decrease athletic performance.

Although numerous studies addressed in the meta-analyses examined the cohesion – performance relationship, very few studies have examined the link between group or team cohesion, the individual athlete's levels of motivation, and athletic performance. Williams and Widmeyer (1991) conducted one of the earlier studies focusing on the impact of cohesion and motivation. They assessed whether communication and motivation could predict athletic performance within individual sports. The researchers surveyed 83 NCAA Division I female golfers using the Group Environment Questionnaire, three questions assessing intrateam communication, and one question assessing motivation. Performance was measured as the total score of the team minus the team's differential score.

A hierarchical multiple-regression indicated that cohesion was a significant predictor of both communication and motivation, accounting for 23% and 28% of the

variances respectively. Additionally, only motivation was a significant predictor of performance. Further analysis of the cohesion factor indicated that both task and social cohesion were positively correlated with performance, but only task cohesion was a significant predictor of performance. These results provide support for the predictive relationship between cohesion and motivation, as well as motivation and performance. Specifically, for these individual sport athletes, cohesion related to the task at hand (i.e., the competition) predicted higher levels of motivation, which ultimately predicted more successful performance.

Halbrook, Blom, Hurley, Bell, and Holden (2012) also acknowledged the lack of studies exploring this relationship between cohesion and motivation and set out to further understand this relationship. Unlike the current study that explored the impact of cohesion on motivation, Halbrook et al. (2012) examined the degree to which gender and motivation type were related to an athlete's perception of cohesion. The researchers surveyed 253 collegiate student-athletes from eight team sports and seven individual sports.

The results of the analysis indicated that intrinsic motivation, integrated regulation, and identified regulation all had significant positive relationships to both task and social cohesion. Additionally, there was a negative significant relationship between amotivation and both task and social cohesion. Furthermore, motivation type and gender accounted for 19% of variance in both social and task cohesion with motivation type being the only significant predictor of social cohesion. These results suggest a significant relationship between cohesion and motivation and indicate a need for further examination of the relationship. The Halbrook et al. (2012) study examined the influence of

motivation on cohesion, but did not explore the impact that cohesion may have on motivation, or potential moderators, which the current study investigated.

Gu, Solmon, Zhang, and Xiang (2011) examined the relationship and predictive strengths of group cohesion on motivation and motivational outcomes. In contrast to Halbrook et al. (2012), this study involved female students participating in an aerobics class rather than examining student-athletes. Gu et al. operationalized motivation as being comprised of expectancy-related beliefs and subjective task values. Expectancy-related beliefs were the beliefs an individual has about his or her ability as well as the expectations that the individual has about success. Subjective task values were made up of four values: importance, interest, usefulness, and cost (Gu et al., 2011).

The researchers analyzed the results from 121 female college students who participated in the study, the majority of whom were Caucasian. The results indicated that the cohesion components were predictors of importance, interest, and usefulness values, as well as expectancies for success. When examining the outcomes of class attendance and exercise choice, the researchers again found a relationship between the variables. More specifically, class attendance was positively related to perceptions of cohesion. Furthermore, exercise choice was positively related to cohesion, expectancy-related beliefs, and subjective task values. Though limited due to all the participants being students rather than student-athletes, this study provides support for further examination of the impact of cohesion on motivation. As cohesion is believed to be more important in sports than in classrooms, it is possible that the influence of cohesion on motivation will be even stronger.

As can be seen by the few studies reviewed, there is less research on team-athlete relationship or team cohesion in contrast to the large amount of research looking at the influence of the coach-athlete relationship on motivation. This lack of research indicates the necessity of the current study. The studies conducted by Williams and Widemeyer (1991) and Gu et al. (2011) found a relationship between cohesion and motivation, although they only had female samples. Furthermore, the sample used by Williams and Widmeyer contained female athletes participating in only one individual sport. Williams and Widmeyer furthered the understanding of the relationship between cohesion, motivation, and ultimately performance. Halbroom et al. (2012) added to the field by examining a sample of male and female athletes from both individual and team sports. However, the study examined the influence of motivation on cohesion. In contrast, the current study investigated the impact of cohesion on motivation in male and female athletes in both team and individual sports. The current study furthered the understanding of the relationship between cohesion, involving cohesion factors from both the coach and team, and motivation, taking into account variables unaddressed in previous studies (i.e., athletic identity, sex, and sport type).

Potential Moderators of the Cohesion-Motivation Associations

The relationship between the two cohesion components (i.e., team cohesion and the coach-athlete relationship) and athletic motivation is quite complex, requiring an examination of other potentially influential variables. As it is not realistic to control for or examine the influence of all the variables, this study investigated three variables, based on past research and observation, that are believed to moderate the relationship between cohesion and motivation: athletic identity, sex, and sport type.

Athletic identity. Over the course of a lifetime, individuals explore an array of roles and begin to develop a sense of their identity based on those roles. This identity of the self is unique to each individual as identity can vary in the degree to which an individual identifies with a particular role or roles. One role that an individual may have is that of being an athlete, which would result in some degree of an athletic identity.

Stephan and Brewer (2007) identified two components of athletic identity: a public identity (i.e., being recognized by others as being an athlete) and a private identity (i.e., the degree to which an individual defines self-concept by the athlete role). Having a healthy degree of athletic identity may aid in justifying the sacrifice and dedication required for elite performance (Warriner & Lavalley, 2008). However, the demands and culture of athletics may lead individuals to develop an extremely high degree of athletic identity or engage in identity foreclosure.

Identity foreclosure in athletes has been explored by various researchers, particularly in relation to career exploration and academic involvement (Murphy, Petitpas, & Brewer, 1996; Shurts & Shoffner, 2004; Ward et al., 2005). Mallett and Hanrahan (2004) found the centrality of sport in the athlete's life as one of the main themes in their qualitative study of elite athletes. The demands of sport at the elite level necessitate a higher degree of athletic identity. Some researchers have pointed out that the increased demands of elite athletes and higher degree of athletic identity may have the unintended consequence of isolating athletes so that they only relate with teammates, coaches, and other athletes (Jolly, 2008; Shurts & Shoffner, 2004; Warriner & Lavalley, 2008). This could impact the ability of athletes to form relationships outside of their

coach and team, which may make those relationships more important to satisfying the basic psychological need of relatedness theorized in SDT.

Though there has been considerable literature on identity and, more specifically, athletic identity, there is a gap in the literature for examining the relationship between athletic identity and motivation on performance. It is possible that the more that individuals identify as athletes, the more likely that they will engage in behaviors that match that identity and achieve more successful performance.

Anderson (2004) developed a psychometrically sound measure for assessing athletic identity for all degrees of physical activity (i.e., from exercise to competitive sport). Upon conducting a confirmatory analysis with two samples of undergraduate and graduate psychology students (466 and 485 respectively), two indicators of physical activity, stage of exercise behavior and exercise frequency, correlated significantly with Anderson's factors of athletic identity. This provides support for a link between athletic identity and increasing or sustaining physical activity behavior, an important factor in enhancing the probability of successful performance.

Rather than examining athletic identity, Faye and Sharpe (2008) explored identity formation as it relates to academic motivation. A sample of 362 psychology students completed the Erikson Psychosocial Stage Inventory, Basic Need Satisfaction in Life Scale, and Academic Motivation Scale. The researchers examined the relationship between identity, intimacy, basic psychological needs in SDT, and intrinsic motivation. The results were analyzed using a path analysis in order to further understand the direction of the relationship.

The results indicated that identity was significantly related to autonomy and competence, while intimacy was significantly related to relatedness. Furthermore, competence was significantly related to intrinsic motivation, suggesting that identity increases competence levels, which then increases motivation. Therefore, the greater the degree to which an individual identifies with a role, the more intrinsically motivated that individual will be to engage in activities associated with that role. Applied to the current study, it suggests that a strong athletic identity might diminish the importance of coach or team relationships in predicting motivation.

Sex differences between men and women in sport. In the world of sport, a common saying when explaining the difference between coaching men and women is that ‘boys need to play good to feel good while girls need to feel good to play good.’ This phrase highlights the belief that differences exist between a male and female approach to participating in sports. Flood and Hellstedt (1991) highlighted this belief arguing that women often participate in sport for the bonds that develop while men are invested in sport for the opportunity to compete. Numerous studies have been conducted exploring the general relational styles of men and women and find that women typically emphasize the importance of having and maintaining a good relationship in order to be satisfied and productive more so than men (Fusilier, Ganster, & Mayes, 1986; House, Landis, & Umberson, 1988; Kwang, Crockett, Sanchez, & Swann, 2013; Shumaker & Hill, 1991). These studies, in combination with the commonplace assumptions about sex differences within sports, have lead researchers to specifically address the possible influence of sex in sport relationships and motivation.

Norman and French (2013) conducted a qualitative study interviewing 16 female track and field athletes regarding their coach-athlete relationship. The interviews revealed four main themes: (a) salience of gender in the coach-athlete relationship, (b) performing as a popularity contest for the attention of the coach, (c) the “(em)powerful” (Norman & French, 2013, p. 16) role of the coach in the lives of women athletes, and (d) women’s evaluation of their coaches’ understanding of them as both a performer and a person, utilizing an “invested role” (Norman & French, 2013, p. 16) approach. The first and last themes, in particular, highlight the unique experience of female athletes. Unlike men, women are often faced with developing coach-athlete relationships with a coach of the opposite gender, which can bring another dynamic to the relationship. The “invested role” (Norman & French, 2013, p. 16) theme emphasized the importance of a relational component for female athletes, and not just within the sport context, but also socially and personally.

In a meta-analysis focused specifically on the cohesion-performance relationship in sport, Carron et al. (2002) revealed a significant difference between men and women regarding the cohesion-performance relationship. The effect size for female athletes/teams was much larger ($ES = .949$) than for male athletes/teams ($ES = .556$). These results suggest that cohesion is more important and has a larger impact on performance for women than for men, supplementing previous research and beliefs regarding the importance of relationships.

Hollembek and Amorose’s (2005) study of 280 NCAA Division I athletes examining coaching behaviors, also explored gender differences. The results indicated some significant differences between men and women. Specifically, women reported a

higher sense of autonomy, relatedness, and intrinsic motivation. Furthermore, men were more likely to perceive behavior exhibited by their coach as more frequently autocratic and less frequently democratic.

The increased relatedness expressed by female athletes highlights the relational quality that has been evident in sport in past research. The more positive motivational profile indicated by female athletes is noteworthy; particularly as female collegiate athletes have fewer options for continuing play professionally. It is possible they are likely motivated to participate in sport for more intrinsic and internal reasons. These results provide support for exploring differences in how men and women perceive the coach-athlete relationship and therefore, the impact that the coach-athlete relationship may have on motivation.

Amorose and Anderson-Butcher (2007) found results similar to Hollebeak and Amorose (2005) in their study of 581 middle- and high-school athletes (263 men and 318 women). A significant gender effect existed, such that men reported a lower sense of autonomy, less feeling of relatedness, and less of a self-determined motivational orientation than women. The replication of Hollebeak and Amorose's study adds to the support of the differences between male and female athletes and the necessity for acknowledging the impact of sex on the coach-athlete relationship, team cohesion, level of motivation, and motivational orientation.

In an effort to expand the literature, Sheldon and Watson (2011) investigated the differences in athletes performing at various competition levels in college (i.e., club, recreational, and varsity). Of particular interest is the significant findings regarding gender differences at the varsity level. Women at the varsity level of college athletics

indicated a significantly higher autonomy support coefficient for positive appraisal ($\beta = .30, p < .01$) than for men ($\beta = .03$) suggesting that female athletes at the varsity level appear to appreciate teams led by an autonomy supportive coach more so than men at the varsity level.

This finding is particularly relevant as the current study examined varsity collegiate athletes. The finding that an autonomy supportive coach would be positively associated with intrinsic motivation, identified motivation, and positive appraisals is consistent with previous studies, but the gender specific finding suggests the potential for the coach-athlete relationship to be more important for women than men.

In their study of 241 collegiate athletes (91 males and 150 females), Stults-Kolehmainen, Gilson, and Abolt (2013) found both supportive and conflicting results surrounding the relationship quality for men and women. The authors examined if the two components of relatedness (i.e., intimacy and acceptance) were predictors of athletic motivation. Athletes completed the Sport Motivation Scale and the Perceived Relatedness Scale. Analysis indicated a significant difference on external regulation scores with men scoring higher than women. This finding suggests that men may be motivated by externally regulated components more than women, which is consistent with the intuitive belief that male athletes have more extrinsically rewarding opportunities, such as professional contracts and financial benefits, than are available to female athletes.

Stults-Kolehmainen et al. (2013) found a significant sex difference in their sample regarding the relatedness subscales: intimacy and acceptance. Interestingly, male athletes indicated higher levels than female athletes on both relatedness subscales. These results

seem to contradict the findings of previous studies in which women scored higher on the relatedness component than men. The researchers suggested that these results may be due to the bonding experience men gain from athletics whereas women have other opportunities to engage in relatedness activities. Furthermore, it should be noted that 115 of the 241 athletes were participating in NCAA Division III sports, which provides no athletic financial assistance through scholarships. Thus, the sample may have been less focused on competition and more invested in the relationships and experience provided by college athletics.

Taken collectively, these studies lend support for the existence of differences between male and female athletes, particularly within the relatedness component of sports. It is likely that this relatedness aspect may be a factor both in the coach-athlete relationship and with the cohesiveness of the team. The majority of the studies (Amorose & Anderson-Butcher, 2007; Hollembeak & Amorose, 2005; Norman & French, 2013; Sheldon & Watson, 2011) indicated that women are more invested and produce higher scores on relatedness components. This provides support for the relational hypothesis that the perceived coach-athlete relationship and sense of team cohesion will be of more importance to the motivation levels of female athletes than for male athletes. The contradicting results from Stults-Kolehmainen et al. (2013) stress the importance of controlling for potentially confounding variables of level of competition.

Type of sport – team/interacting versus individual/coacting. The world of sports is made up of a variety of sports: some are played only by men, others are played only by women; some sport teams have a large number of players while some only have a handful; still other sports are designed to be competed individually. With this large

diversity of what constitutes sports and sport teams, it is crucial to have a clear differentiation between those sports deemed as team or interacting sports and those sports seen as individual or coacting sports. The current study assessed collegiate athletes. It is important to note that all sports housed within a college or university ultimately win or lose as a “team” of the university or college. This creates further challenges in understanding the separation between team and individual sports. Williams and Widmeyer (1991) did a spectacular job in clearly defining what constitutes an individual sport. They stated that an individual sport is one in which “players independently perform the same skills, and team success is determined by the sum of individual performances” (Williams & Widmeyer, 1991, p. 364). This definition allows for some interaction, such as handoffs in track and field or relays in swimming, while continuing to acknowledge that it is not the collective, *interactive* performance found in team sports.

Sport type and the coach-athlete relationship. Rhind, Jowett, and Yang (2012) set out to explore differences between individual and team sport athletes’ perception of the quality of their relationship with their coach. A total of 699 athletes (500 individual, 199 team) completed the Coach-Athlete Relationship Questionnaire. The athletes participating in team sports ranged in age from 16 to 41 and reported a relationship with their coach averaging 24.35 months. Similarly, the individual sport athletes ranged in age from 18-61 with an average length of coach relationship reported as 23.49 months. Rhind et al. were interested in both the direct perspective (i.e., “how the athlete perceives the quality of his/her relationship with the coach,” p. 437) and the meta-perspective (i.e., “how the athlete believes his/her coach perceives the relationship,” p. 437) of the coach-athlete relationship for individual and team sport athletes.

The results from this study indicated several differences between individual sport athletes and team sport athletes regarding their perception of their coach-athlete relationship. First, the latent mean differences of the components of the Coach-Athlete Relationship Questionnaire for the direct perspective indicated that individual athletes report significantly higher levels of closeness and commitment. This difference may be due to the likelihood that individual sport athletes spend more time interacting with their coach and have more undivided attention than that experienced by team sport athletes. Second, the latent mean differences for the meta-perspective indicated that individual sport athletes perceived their coaches as experiencing a higher level of closeness than did team sport athletes. In other words, individual sport athletes “believed that their coach felt more trust, respect, and appreciation for them” (Rhind et al., 2012, p. 447) compared to the perceptions team sport athletes had of their coaches. This result further supports that individual sport athletes may experience a more interdependent coach-athlete relationship than team sports, which might be an important factor for an individual sport athlete’s motivational level and athletic performance.

In the Hollembeak and Amorose (2005) study discussed previously, the researchers not only examined differences between gender regarding the relationship between coaching behaviors and intrinsic motivation, but also explored the differences between individual and team sport athletes. A MANOVA was conducted to determine if any differences existed between the 100 individual sport athletes and the 180 team sport athletes. Hollembeak and Amorose found significant differences on a number of variables.

Athletes participating in team sports reported lower levels of intrinsic motivation, autonomy, and relatedness than individual athletes. Perceptions of coaching behaviors also differed between individual and team sport athletes such that team sport athletes perceived their coaches to be more autocratic while individual sport athletes perceived their coaches to be more democratic. Lastly, team sport athletes reported a higher likelihood of coaches engaging in training and instruction than individual sport athletes. These results provide support for differences in style and the behaviors used by coaches depending upon the type of sport. The different styles may impact the level of relatedness experienced by athletes within the coach-athlete relationship. Intrinsic motivation may also be impacted by the different styles as evidenced by the lower levels of intrinsic motivation and relatedness reported by team sport athletes.

Sport type and the cohesion – performance relationship. In the two meta-analyses mentioned previously, both Mullen and Copper (1994) and Carron et al. (2002) examined the impact of sport type on the cohesion – performance relationship. Mullen and Copper differentiated the two group types based on the amount of interaction required. They found small significant effects of the cohesive – performance relationship for both high interaction requirement and low interaction requirement groups, but found no significant difference between the two groups. It is important to note that Mullen and Copper reviewed studies using all types of groups, not specifically sport teams. Therefore, the inclusion of groups such as artificial and real experimental groups, which had a lower cohesion – performance relationship, could have weakened their results.

In contrast, Carron et al. (2002) only examined studies involving sport teams and athletes. The researchers defined the different sport types as interactive sports being

those that required task interaction and coactive sports as those where no task interaction is required. Their results indicate a slightly larger effect size in the cohesion – performance relationship for coactive sports ($ES = .766$) compared to interactive sports ($ES = .657$), but an F-test revealed no significant differences. The lack of significant differences may be a product of the research designs in the studies used, the samples surveyed, or the instrumentation used to measure cohesion.

When examining only those studies that incorporated the Group Environment Questionnaire, Carron et al. (2002) found a significant difference between coactive and interactive sports. Interestingly, coactive sports had a higher effect size ($ES = 1.042$) than interactive sports ($ES = .451$) for the cohesion – performance relationship. As it is often believed that cohesion is more important for interactive or team sports than for coactive/individual sports, this finding is quite surprising. This difference may be attributed to the smaller size of groups often found in individual sports (ranging from 1-12) as opposed to team sports that can have as many as 100 athletes. The larger the group, the more challenging it is to generate cohesion. This may have impacted the ability to detect a relationship between cohesion and performance.

In the study determining if relatedness predicts athletic motivation, Stults-Kolehmainen et al. (2013) continued the exploration of the impact of sport type on both the components of relatedness and intrinsic motivation. The researchers defined team sports as those being “task interdependent” (p. 310) and individual sports as “task dependent” (p. 310). They found that team sport athletes scored significantly higher than individual sport athletes on both subcomponents of relatedness: intimacy and acceptance. The higher scores reported by team sport athletes signify that cohesion and relatedness

are more apparent within the team setting, as one might expect. The team environment is more likely to lend itself to the development of feelings of intimacy and acceptance within team sport athletes.

Additionally, a MANOVA indicated that team sport athletes reported significantly higher levels of intrinsic motivation stimulation than individual sport athletes (Stults-Kolehmainen et al., 2013). Higher levels of intrinsic motivation aid in persisting through the strenuous activities required of elite athletes. It is noteworthy that team sport athletes experienced both higher levels of intrinsic motivation and relatedness. The existence of these two components together may suggest that relatedness is an important component for increasing intrinsic motivation in team sport athletes, which may ultimately impact athletic performance. Further exploration is needed to understand the importance of team cohesion and its impact on motivation and performance. Collectively, these studies suggest the importance of considering the type of sport as a potential moderator of the cohesion-motivation associations, especially when examining the importance of both the coach-athlete and team-athlete relationships.

The 2012 study conducted by Halbrook et al. also examined the additional influence of sport type. When adding sport type to the model, the amount of variance in task cohesion explained by motivation and gender increased from 19% to 23% while the variance in social cohesion increased from 19% to 25% (Halbrook et al., 2012). These increases indicate that sport type is a significant predictor of social and task cohesion with individual sport participants reporting lower cohesion perceptions.

Summary

When taken collectively, the literature reviewed in this chapter provides support for the proposed relationships among variables and indicates deficits in the literature that the current study addressed. Self-determination theory indicates that intrinsic forms of motivation as well as two extrinsic forms of motivation (i.e., identified regulation and integrated regulation) are linked to behaviors such as persistence, which lead to a higher likelihood of successful performance. Therefore, this study assessed motivation, a more easily measured outcome variable that has been found to be positively correlated to several performance outcomes.

While previous research within sports has approached understanding athletes by examining the sport world as a recreational activity, the current study used the vocational/organizational psychology framework of P-E fit. The use of this model expanded the way in which collegiate sports are understood by acknowledging the factors that mirror the job experience. The application of this theoretical perspective included an emphasis on an athlete's "fit" with team and suggested that fit leads to better outcomes, including performance.

The reviewed literature also indicated significant associations between the coach-athlete relationship and positive outcomes such as performance and motivation, as well as between team cohesion and the same positive outcomes. However, the studies examined failed to acknowledge the combined impact of both relationships. Considering them in combination advances the understanding of each on motivation. Additionally, several moderators were included in the current study as they have been supported in the literature, but not fully tested. Athletic identity, sex, and sport type have all been

examined to understand their influence on various factors, but the degree to which they moderate the relationships between the coach-athlete relationship, team-athlete relationship, and motivation has not been explored. The current study filled this existing gap in the literature and furthered the understanding of the impact of cohesion on motivation.

Chapter 3

Methods

Participants

The present study consisted of a nonrandom sample of collegiate student-athletes participating in varsity level sports at Division I, II, and III colleges and universities within the United States. A total of 229 student-athletes completed the survey, but one participant was removed due to not specifying the sport played and an additional nine were removed due to indications they were statistical outliers (described in further detail in Chapter 4).

Upon completion of the preliminary analysis, a final sample size of 219 student-athletes was used for the analyses (119 men; 100 women; mean age = 20.15 years, $SD = 1.52$). The majority of participants were Caucasian (82.2%) with fewer identifying as Latino/Hispanic (5%), African American (4.6%), Other (3.2%), Multiracial (2.3%), Asian/Pacific Islander (0.9%), and Native American/Alaskan Native (0.9%). Two preferred not to provide information about their race. Eighteen of the participants were international student-athletes.

The sample consisted of student-athletes playing at the Division I (66.2%), Division II (29.7%), and Division III (4.1%) level and receiving various degrees of scholarship (full, 18.3%; partial, 61.2%; none, 20.5%). This sample of student-athletes was predominately in their first season with the current head coach (55.3%) and team (55.7%). Additionally, 71.2% of the student-athletes were currently in-season when completing the survey.

A variety of team and individual sports were represented, though a much larger number of team sport student-athletes completed the study (team, $n = 166$, 75.8%; individual, $n = 53$, 24.2%). The following team sports were represented: baseball (42.5%), softball (19.2%), soccer (8.2%), basketball (5%), lacrosse (0.5%), and volleyball (0.5%). The following individual sports were represented: cross country (9.6%), track and field (4.6%), equestrian (3.2%), tennis (3.2%), golf (2.3%), gymnastics (0.5%), rifle (0.5%), and swimming and diving (0.5%).

Measures

Demographics. Participants first completed a short demographic questionnaire asking for designation of their (a) age, (b) sex, (c) sport, (d) level of competition (i.e., Division I, II, or III), (e) receipt of athletic scholarship (i.e., full, partial, or no scholarship), (f) racial self-designation, (g) number of seasons spent with head coach, (h) number of seasons spent with the team, (i) number of years playing sport, (j) whether they are currently in or out of season, and (k) if they were an international student-athlete or not. This demographic information was used to describe the characteristics of the sample, provide control variables, and separate the sample into team sport participants and individual sport participants. The following sports were designated as team sports due to their interactive nature: baseball, basketball, field hockey, football, ice hockey, lacrosse, soccer, softball, volleyball, water polo, and rowing. In contrast, the following sports were deemed as individual sports since much of the sport is based upon the compilation of individual performances with minimal interaction between teammates: bowling, cross country, equestrian, fencing, golf, gymnastics, rifle, tennis, track and field, skiing, swimming and diving, and wrestling.

Athletic Identity Measurement Scale (AIMS, Brewer, Van Raalte, & Linder, 1993). Developed by Brewer et al. (1993), the AIMS assesses the degree to which an individual identifies his or her self-concept as an athlete. The AIMS is a 10-item self-report scale with each item answered on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A high overall score on the AIMS indicates a high athletic identity perceived by the individual (Visek et al., 2008). The items load onto three subscales of social identity, exclusivity, and negative affectivity (Phoenix, Faulkner, & Sparkes, 2005). The social identity subscale acknowledges the extent to which individuals believe they are recognized or acknowledged as athletes from others' perceptions (Brewer et al., 1993). The subscale of exclusivity relates to how much an individual's self-identity is solely derived from the athlete role (Brewer et al., 1993). Lastly, the negative affectivity subscale assesses the emotional adjustment of an individual to adverse outcomes in sport (Brewer et al., 1993). Items on the instrument are typically summed to yield a total identity score.

Brewer et al. (1993) found the AIMS had a coefficient alpha of .93 and a test-retest reliability coefficient of .89 over a two-week period in a sample of 119 male and 124 female students. The 10-item AIMS has been found to correlate moderately with scales believed to assess similar constructs, including constructs measured by the Perceived Importance Profile (PIP) sports competence scale ($r = .42$), self-role scale ($r = .61$), and the three subscales (i.e., competitiveness, win orientation, and goal orientation) of the Sport Orientation Questionnaire (SOQ) ($r = .53, .34, \text{ and } .26$, respectively). The Cronbach's alpha ($\alpha = .82$) for the current sample was acceptable.

Coach-Athlete Relationship Questionnaire (CART-Q, Jowett & Ntoumanis, 2004). The CART-Q is an 11-item self-report questionnaire that measures the quality and content of the coach-athlete relationship. Each item is phrased as a statement (e.g., “I feel close to my athlete/coach”) that can address the relationship from either the coach’s or the athlete’s perspective. Items are responded to on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) (Jowett & Ntoumanis, 2004). This study used wording assessing the athletes’ perspectives of the coach-athlete relationship. The higher the score on the CART-Q, the higher the interpersonal satisfaction experienced by the individual completing the instrument (Jowett & Ntoumanis, 2004).

The CART-Q assesses the emotions, cognitions, and behaviors within the coach-athlete relationship, which Jowett and Ntoumanis (2004) termed closeness, commitment, and complementarity, respectively. Closeness is defined as the feeling of being “emotionally close with one another in the coach-athlete relationship” (Jowett & Ntoumanis, 2004, p. 246). The CART-Q addresses this component through four items that assess for feelings of liking, trust, respect, and appreciation. Three items address the construct of commitment, the degree to which an athlete or coach desires to maintain the relationship (Jowett & Ntoumanis, 2004). The final four items address the CART-Q component of complementarity, defined by Jowett and Ntoumanis as the degree of cooperative interactions between the coach and athlete.

Jowett and Ntoumanis (2004) developed this questionnaire based on qualitative studies assessing the perceived relationship between an athlete and a coach. The researchers originally generated 23 items related to the coach-athlete relationship and two items to assess for criterion validity (Jowett & Ntoumanis, 2004). They determined three

factors believed to be involved in this relationship: closeness, co-orientation (later changed to commitment), and complementarity. Upon examining the questionnaire with a sample of 60 athletes and 60 coaches, four items were deleted after the initial analysis showed they failed to meet the criteria necessary to remain in the scale (i.e., acceptable inter-item correlation, a corrected item-total correlation coefficient of .40, and α does not increase upon deletion of item). An additional eight items were removed from the scale as they failed to load on any of the three factors. The items developed to examine the validity of the assessment had an appropriate internal consistency ($\alpha = 0.83$) (Jowett & Ntoumanis, 2004).

Jowett and Ntoumanis (2004) conducted a follow-up study using the refined 11-item CART-Q on 214 participants (65% were athletes). A confirmatory factor analysis was conducted and the researchers found that the items loaded highly on the specified factors, with factor loadings ranging from .68 to .90 (Jowett & Ntoumanis, 2004). Convergent validity was supported through adequate loadings by the items on the hypothesized factors (commitment = .61, closeness = .66, and complementarity = .67) (Jowett & Ntoumanis, 2004). The three-factor model was compared against two-factor models that combined two of the proposed factors. These models fit more poorly than the proposed three-factor model (Jowett & Ntoumanis, 2004). The shortened CART-Q generated acceptable Cronbach's alpha for all three subscales of closeness ($\alpha = .87$), commitment ($\alpha = .82$), and complementarity ($\alpha = .88$), as well as for the total coach-athlete relationship scale ($\alpha = .93$) (Jowett & Ntoumanis, 2004). Test-retest reliability has not yet been assessed for the CART-Q and is a possible limitation to its use. For the current study, the total CART-Q score was used to assess the athlete's perceived cohesion

with coach. A Cronbach's alpha of .96 was obtained for the CART-Q scale in the current sample.

Group Environment Questionnaire (GEQ, Carron, Widmeyer, & Brawley, 1985). Carron et al. (1985) developed the Group Environment Questionnaire (GEQ) to assess group cohesion, particularly within sport teams. Specifically, the GEQ measures “the task and social aspects of an individual's perceptions of a sport group as a totality and the individual's attraction to the group, as they relate to the development and maintenance of group cohesion” (Ostrow, 1996, p. 231). This 18-item self-report questionnaire is comprised of Likert-type items that are answered on a scale from 1 (*strongly disagree*) to 9 (*strongly agree*) (Carron et al., 1985). The GEQ is comprised of four subscales: Individual Attractions to Group-Task (ATGT), Individual Attractions to Group-Social (ATGS), Group Integration-Task (GIT), and Group Integration-Social (GIS) (Carron et al., 1985). These subscales represent the individual versus group constructs and the task versus social constructs of team cohesion. The ATGT subscale is defined as the individual's motivation to engage with the group towards a desired goal; the ATGS is the individual's desire to develop or maintain the relationships within the group (Carron et al., 1985). In contrast, the GIT subscale represents the similarity or unification of the group working towards a desired goal and the GIS subscale is described as the closeness of the social interactions within the group as a whole (Carron et al., 1985). The higher the score an individual reports within each subscale, the more cohesion the individual experiences or observes within each subscale.

Carron et al. (1985) initially generated 354 items based on the literature on cohesion in sport. These items were reduced through an item deletion process into a

more parsimonious 53-item questionnaire. An item analysis was conducted after administration of this 53-item questionnaire to 212 athletes, reducing the questionnaire to 24-items while maintaining internal consistency (Carron et al., 1985). Further factor analysis resulted in the deletion of six more items, bringing about the final 18-item version of the GEQ. In a sample of 247 athletes, the four subscales of Individual Attractions to Group-Task (ATGT), Individual Attractions to Group-Social (ATGS), Group Integration-Task (GIT), and Group Integration-Social (GIS) had Cronbach's alphas of .75, .64, .70, and .76 respectively (Carron et al., 1985). Brawley, Carron, and Widmeyer (1987) found the GEQ to have adequate concurrent validity, as determined by the correlations between the GIT and GIS scales of the GEQ with the group perception score of the Sport Cohesiveness Questionnaire (SCQ) for both team and individual sport athletes (Brawley et al., 1987). This instrument has not yet been assessed for test-retest reliability and this is a possible limitation to its use.

In an attempt to further understand the factorial construct validity, Li and Harmer (1996) conducted a confirmatory analysis on the GEQ scores of 173 male and 148 female college athletes participating in team sports. Li and Harmer hypothesized four first-order models and three second-order models. Upon analysis, they found that the second-order model comprised of two factors, individual (ATGT and ATGS) and group (GIT and GIS), yielded the best indicators of fit ($CFI = .909$, $RMSEA = .059$). These results suggest that the GEQ can be understood as two main factors, individual and group, and therefore can be scored and interpreted as such. As the current study was most interested in understanding the athlete's sense of cohesion with the team, the individual factor was used as a representation of perceived team cohesion. Cronbach's alpha for the total GEQ

scale ($\alpha = .83$) and for the individual factor subscale ($\alpha = .67$) indicated the scale reliability was acceptable in the current sample.

Sport Motivation Scale-II (SMS-II, Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013). The original Sport Motivation Scale (SMS), a 28-item assessment developed in 1995 by Pelletier and colleagues, was revised by Pelletier et al. (2013) into an 18-item assessment. This revised version addresses previous concerns regarding the lack of an integrated regulation subscale and combines the three intrinsic motivation scales (intrinsic motivation to know, intrinsic motivation to experience stimulation, and intrinsic motivation to accomplish) into a more cohesive construct. The SMS-II assesses six factors of motivation: amotivation, external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic motivation.

Amotivation refers to a lack of motivation in general and is often characterized by an absence of reasons for continuing to persist in sport (Pelletier et al., 1995). Intrinsic motivation relates to an individual's desire to engage in the activity solely for the "pleasure and satisfaction derived from doing the activity" (Pelletier et al., 1995, p. 36). The four regulation factors are all forms of extrinsic motivation. External regulation refers to the receipt of external rewards that impact the level of motivation (Pelletier et al., 1995). Introjected regulation occurs when an external source has been internalized and is no longer needed to be present to induce motivation (Pelletier et al., 1995). Identified regulation transpires when a behavior is performed out of choice. That is, there remains an external reward for engaging in the activity, but this reward is self-determined and internally regulated (Pelletier et al., 1995). Lastly, integrated regulation refers to

engaging in an activity because it is deemed valuable and is “congruent with the individual’s other life goals, objectives, and needs (Pelletier et al., 2013, p. 330).

The revised SMS-II asks participants to respond to a variety of statements addressing the prompt of “why do you practice your sport?” (Pelletier et al., 2013). Each item is answered on a 7-point Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*) (Pelletier et al., 2013). The scores on each subscale are summed in order to determine what form of motivation is being experienced and the degree to which an individual is amotivated. In a sample of 290 basketball players, each of the subscales on the revised SMS-II was found to have appropriate internal consistency reliability with Cronbach’s alpha ranging from .73 to .86 (Pelletier et al., 2013). The SMS-II was found to have substantial inter-scale correlations (Pelletier et al., 2013). Pelletier et al. (2013) found adequate levels of construct validity as the subscales SMS-II had acceptable correlations ranging from .35 to .52 with the appropriate motivational subscales on the Global Motivational Scale. Test-retest reliability has not yet been assessed for the SMS-II and is a possible limitation to its use.

As the current study was interested in determining the influence of the athlete’s perceived relationship with coach and team on self-determined motivation, operationalization of self-determined motivation was crucial. Pelletier et al. (2013) acknowledged that self-determined forms of motivation include the intrinsic motivation, identified regulation, and integrated regulation subscales. The combination of these subscales into a self-determined index has not yet been psychometrically analyzed for the current revised SMS-II. Therefore, the current study conducted two analyses; first with only the intrinsic motivation subscale, and second with a composite self-determined

motivation score generated by the total score of the three forms of self-determined motivation: intrinsic motivation, identified regulation, and integrated regulation.

Reliability analysis using Cronbach's alpha was conducted for the overall SMS scale ($\alpha = .81$), the intrinsic motivation subscale ($\alpha = .87$), and for the self-determined motivation composite scale ($\alpha = .91$).

Procedures

After receiving IRB approval, participants were recruited via listservs, collegiate athletic departments, coaches, former players, and social media (i.e., Facebook).

Furthermore, participants were recruited through a snowball sampling method in which participants who completed the study were encouraged to recruit additional participants. Participants who completed the study in full had the opportunity to enter into a raffle to win one of five gift cards. This incentive had prior approval by the NCAA and allowed the participants to remain compliant with NCAA rules of eligibility.

Participants followed a link to the study where they completed an informed consent. For those participants who agreed to the terms of the informed consent, the instruments were presented in the following order: demographics questionnaire, CART-Q, GEQ, AIMS, and SMS-II. Upon completion of the study, participants were provided the opportunity to be taken to a separate survey to submit their email for a chance to win the raffle. This process separated personal email contact information from submitted responses.

Chapter 4

Results

Preliminary Analysis

Frequencies and descriptive statistics were calculated for the 229 student-athletes that completed the survey. One participant failed to indicate which sport was played; this participant was removed from subsequent analyses. As part of the preliminary analyses, the residual statistics of the initial multiple hierarchical regression were examined to assess for multivariate outliers. Nine participants were removed based on having a centered leverage value larger than the critical value (0.95). This resulted in a final sample size of 219 student-athletes. Correlations, means, and standard deviations of all study variables are presented in Table 1.

Tests of mean differences (ANOVAs) were calculated for relevant control variables (i.e., competition level, scholarship status, in or out of season) to determine if there were any differences on the dependent variables. These control variables were also entered into the preliminary regression analyses. As no mean group differences were detected and the control variables did not significantly predict the dependent variables, the control variables were removed from subsequent regression analyses to simplify the models and retain power. Standardized residual scatterplots, P-P plots, and histograms were examined for all the regression analyses indicating that the regression analyses met assumptions of normality, linearity, and homogeneity of variance.

Table 1

Summary of Correlations and Descriptive Statistics Among Variables (N = 219)

Variables	1	2	3	4	5	6	7
1. CART-Q	--	.41***	.14*	-.18**	.11	.31***	.26***
2. GEQ		--	.15*	-.10	.07	.29***	.28***
3. AIMS			--	-.01	.16*	.35***	.42***
4. Sex				--	-.15*	.00	-.01
5. Sport Type					--	-.02	-.03
6. Intrinsic Motivation						--	.86***
7. Self-Determined Motivation							--
<i>M</i>	63.80	68.90	52.69	.46	.01	16.48	48.99
<i>SD</i>	12.38	9.72	9.19	.50	.43	3.81	10.05

Note. CART-Q = Coach-Athlete Relationship Questionnaire; GEQ = Group Environment Questionnaire (Individual Factors); AIMS = Athletic Identity Measurement Scale.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Multiple Regression Analysis

As recommended by Frazier, Tix, and Barron (2004), the predictors (sense of cohesion with coach and team) and continuous moderator variable of athletic identity were centered by subtracting the sample mean of the variable from each participant's score to reduce multicollinearity prior to conducting the regression analyses. Preliminary examination of the results indicated there was no extreme multicollinearity in the data as all variance inflation factors were less than three. Sex is a categorical variable and was therefore coded as 0 and 1. As there were more team sport athletes than individual sport athletes in the dataset, the categorical variable of sport type was coded using the weighted effect coding recommended by Louis (2009), such that team sport athletes were coded as 0.25 and individual sport athletes were coded as -0.75. Interaction terms were created by taking the product of the centered predictor and moderator variables, resulting in the creation of seven new variables (cohesion with team x sex, cohesion with coach x sex, cohesion with team x athletic identity, cohesion with coach x athletic identity, cohesion with team x type of sport, cohesion with coach x type of sport, and cohesion with team x cohesion with coach).

As there continues to be a debate regarding the appropriate form of motivation to assess athletes, regression analyses were run separately for a dependent variable of the intrinsic motivation subscale of the SMS-II and a combined form of self-determined motivation using the composite score of intrinsic motivation, identified regulation, and integrated regulation. In total, six separate hierarchical multiple regression analyses were conducted to test the hypotheses of this study. Two analyses were conducted with athletic identity as a moderating variable, one assessing the relationship to intrinsic

motivation, another to self-determined motivation. Two analyses were conducted with sex as the moderator, one assessing the relationship to intrinsic motivation, another to self-determined motivation. The final two analyses were conducted with type of sport as the moderator, one assessing the relationship to intrinsic motivation, another to self-determined motivation.

The hierarchical models were each created by first entering the predictor (sense of cohesion an athlete experiences within the coach-athlete relationship and with the team) and moderator variables (athletic identity, sex, or type of sport). This step was followed by entering the newly created interaction terms for that analysis in the following order: cohesion with team x moderator, cohesion with coach x moderator, and finally cohesion with team x cohesion with coach. As there is extensive literature on the importance of the coaching relationship, this order was chosen to determine what it contributed after accounting for the effect of cohesion with team. The interaction of cohesion with team x cohesion with coach is necessary to include, but is not theoretically interesting and was not interpreted. An interaction (moderating) effect was determined by examining the R^2 -change at the second, third, and fourth steps. Significant interaction effects were probed and graphed using Excel worksheets created by Jeremy Dawson (n.d.).

The first regression analysis examined the relationships between cohesion with coach and cohesion with team on intrinsic motivation, moderated by athletic identity. It was hypothesized that athletic identity would moderate the relationships between coach and team cohesion and intrinsic motivation to perform such that cohesion would have a stronger effect on motivation when athletic identity was lower, but cohesion would have minimal or no effect when athletic identity was high. The predictor variables, cohesion

with coach, cohesion with team, and athletic identity, accounted for 21.4% ($F(3, 215) = 19.53, p < .001$) of the variance in motivation. In order of importance, athletic identity ($\beta = .30$), cohesion with coach ($\beta = .20$) and cohesion with team ($\beta = .17$) all significantly contributed to explaining this variance. The addition of the interaction variable, cohesion with team x athletic identity, in the second step resulted in a significant R^2 -change, accounting for an additional 1.7% of variance. Examination of the slopes for this two-way interaction, graphed in Figure 1, revealed that a greater sense of cohesion with the team is significantly related to the level of intrinsic motivation to perform when athletic identity is low, but not when athletic identity is high. Neither the inclusion of cohesion with coach x athletic identity in step three nor cohesion with coach x cohesion with team in step four resulted in a significant R^2 -change.

The second regression analysis examined the same relationships, but used self-determined motivation as the independent variable. The predictor variables, cohesion with coach, cohesion with team, and athletic identity, accounted for 23.4% ($F(3, 215) = 23.19, p < .001$) of the variance. Similar to the findings on intrinsic motivation, athletic identity ($\beta = .38$), cohesion with team ($\beta = .17$) and cohesion with coach ($\beta = .13$) all significantly contributed to explaining the variance. As with the previous analysis, the addition of the interaction variable, cohesion with team x athletic identity, at the second step resulted in a significant R^2 -change ($F_{change} = .02$). Cohesion with team x athletic identity accounted for an additional 1.9% of the variance. Examination of the slopes of this two-way interaction, graphed in Figure 2, indicated that when athletic identity is low, group cohesion is predictive of self-determined motivation. Again, the inclusion of the other interaction terms, cohesion with coach x athletic identity and cohesion with coach x

cohesion with team, in steps 3 and 4 did not result in a significant R^2 -change. Results for the regression analyses using athletic identity as the moderator are found in Table 2.

Table 2

Model Summary of Hierarchical Multiple Regression Analyses using Athletic Identity as a Moderator

Variable	IM				SDT			
	B	SEB	β	R ² -change	B	SEB	β	R ² -change
Step 1				.21***				.24***
CART-Q	.06	.02	.20**		.11	.05	.13*	
GEQ	.07	.03	.17*		.18	.07	.17**	
AIMS	.12	.03	.30***		.42	.07	.38***	
Step 2				.02*				.02*
GEQ x AIMS	-.01	.00	-.13*		-.02	.01	-.14*	
Step 3				.00				.00
CART-Q x AIMS	.00	.00	-.01		.00	.01	-.04	
Step 4				.00				.01
CART-Q x GEQ	.00	.00	.01		.01	.01	.08	

Note. CART-Q = Coach-athlete Relationship Questionnaire; GEQ = Group Environment Questionnaire (Individual Factors); AIMS = Athletic Identity Measurement Scale. Final Model *F* Statistics: IM - $F(6, 212) = 10.63, p < .01$; SDT - $F(6, 212) = 13.06, p < .01$. * $p < .05$. ** $p < .01$. *** $p < .001$.

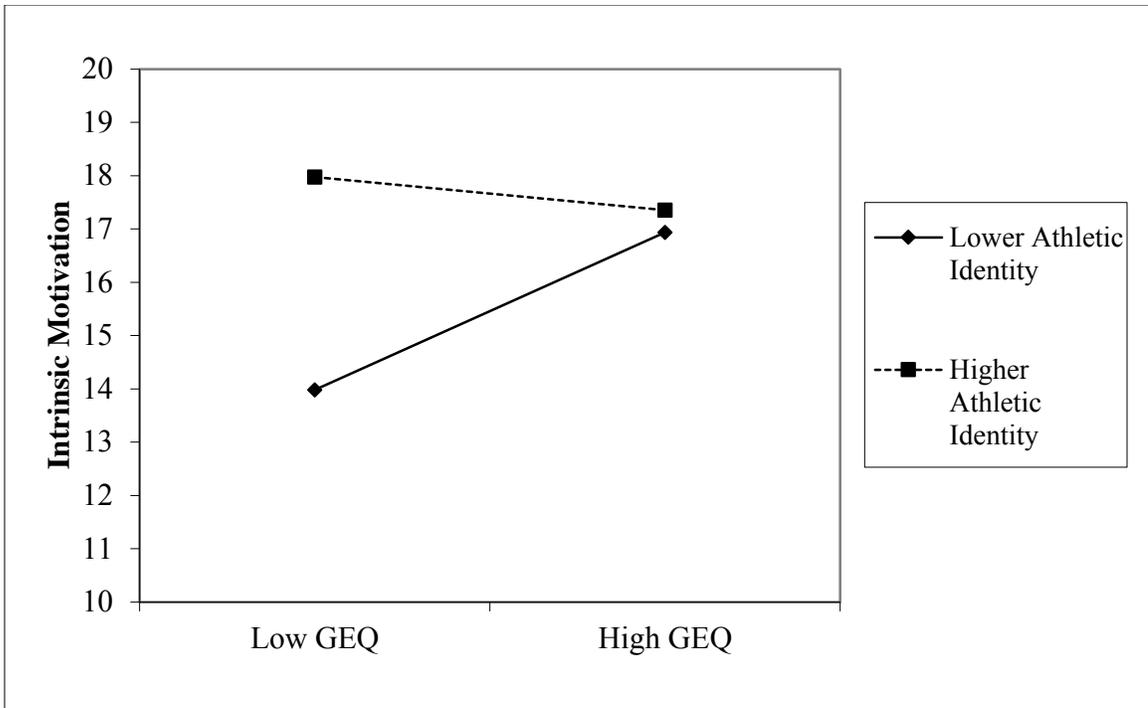


Figure 1. Two-way interaction of Cohesion with Team and Intrinsic Motivation moderated by Athletic Identity.

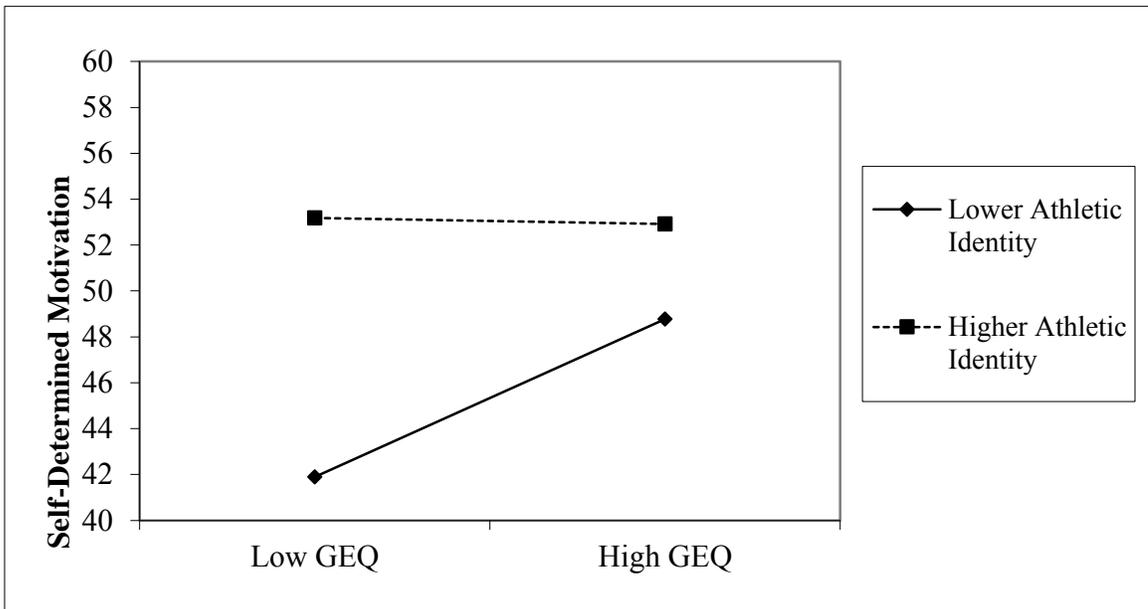


Figure 2. Two-way interaction of Cohesion with Team and Self-Determined Motivation moderated by Athletic Identity.

The next two regression analyses examined the relationships between cohesion with coach and cohesion with team on motivation, moderated by sex. It was hypothesized that sex would moderate the relationships between coach and team cohesion and motivation to perform such that the relationships between cohesion with team and coach and motivational level will be stronger for female athletes than male athletes. This third regression analysis was run with intrinsic motivation as the independent variable. The predictor variables, cohesion with coach, cohesion with team, and sex, accounted for 13.2% ($F(3, 215) = 10.89, p < .001$) of the variance. In this analysis, cohesion with coach ($\beta = .24$) and cohesion with team ($\beta = .20$) significantly contributed to explaining this variance. The addition of the interaction variables (cohesion with team x sex, cohesion with coach x sex, and cohesion with team x cohesion with coach) in the next three steps did not result in a significant R^2 -change at any step.

The fourth regression analysis examined the same moderating relationships with sex, but used self-determined motivation as the independent variable. The predictor variables, cohesion with coach, cohesion with team, and sex, accounted for 10.6% ($F(3, 215) = 8.56, p < .001$) of the variance. Similar to the findings on intrinsic motivation, cohesion with team ($\beta = .22$) and cohesion with coach ($\beta = .14$) both significantly contributed to explaining the variance. The addition of the interaction variables (cohesion with team x sex, cohesion with coach x sex, and cohesion with coach x cohesion with team) in the next three steps did not result in a significant R^2 -change. Results for the regressions analyses using sex as the moderator are found in Table 3.

Table 3

Model Summary of Hierarchical Multiple Regression Analyses using Sex as a Moderator

Variable	IM				SDT			
	B	SEB	β	R ² -change	B	SEB	β	R ² -change
Step 1				.13***				.11***
CART-Q	.07	.02	.24**		.14	.06	.18*	
GEQ	.08	.03	.20**		.22	.07	.22**	
Sex	.45	.49	.06		.81	1.32	.04	
Step 2				.01				.00
GEQ x Sex	-.07	.05	-.12		-.08	.14	-.05	
Step 3				.01				.00
CART-Q x Sex	-.07	.04	-.16		-.11	.12	-.10	
Step 4				.00				.01
CART-Q x GEQ	.00	.00	.00		.01	.01	.08	

Note. CART-Q = Coach-athlete Relationship Questionnaire; GEQ = Group Environment Questionnaire (Individual Factors). Final Model *F* Statistics: IM - $F(6, 212) = 6.24, p < .01$; SDT - $F(6, 212) = 4.69, p < .01$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

The fifth regression analysis examined the relationships between cohesion with coach and cohesion with team on intrinsic motivation, moderated by sport type. It was hypothesized that sport type would moderate the relationships between coach and team cohesion and motivation to perform such that the relationship between cohesion with team and motivational level will be stronger for athletes who are involved in a team sport, whereas the relationship between cohesion with coach and motivational level will be stronger for athletes who are involved in an individual sport.

The predictor variables, cohesion with coach, cohesion with team, and sport type, accounted for 13.2% ($F(3, 215) = 10.91, p < .001$) of the variance. Cohesion with coach ($\beta = .24$) and cohesion with team ($\beta = .20$) both significantly contributed to the explanation of this variance. The addition of the interaction variables (cohesion with team x sport type, cohesion with coach x sport type, and cohesion with coach x cohesion with team) in the next three steps did not result in any significant R^2 -changes.

The sixth and final regression analysis examined the same moderating relationships with sport type, but used self-determined motivation as the independent variable. The predictor variables, cohesion with coach, cohesion with team, and sport type, accounted for 10.9% ($F(3, 215) = 8.73, p < .001$) of the variance. Again, cohesion with team ($\beta = .22$) and cohesion with coach ($\beta = .18$) both significantly contributed to the amount of explained variance. The addition of the interaction variable cohesion with team x sport type in the second step did not result in a significant R^2 -change. However, the addition of the interaction variable cohesion with coach x sport type in the third step did result in a significant R^2 -change. This third step explained an additional 2% of variance. Examination of the slopes of this two-way interaction, graphed in Figure 3,

indicated that having a high sense of cohesion with the coach is more important in generating self-determined motivation for individual sport athletes than for team sport athletes. Results for the regression analyses using sport type as the moderator are found in Table 4.

Table 4

Model Summary of Hierarchical Multiple Regression Analyses using Sport Type as a Moderator

Variable	IM				SDT			
	B	SEB	β	R ² -change	B	SEB	β	R ² -change
Step 1				.13***				.11***
CART-Q	.07	.02	.24**		.14	.06	.18*	
GEQ	.08	.03	.20**		.22	.07	.22**	
Sport Type	-.54	.57	-.06		-1.47	1.52	-.06	
Step 2				.00				.00
GEQ x Sport Type	.04	.06	.04		-.11	.17	-.04	
Step 3				.00				.02*
CART-Q x Sport Type	-.03	.05	-.04		-.29	.13	-.15*	
Step 4				.00				.01
CART-Q x GEQ	.00	.00	.02		.01	.01	.08	

Note. CART-Q = Coach-athlete Relationship Questionnaire; GEQ = Group Environment Questionnaire (Individual Factors). Final Model F Statistics: IM - $F(6, 212) = 5.52, p < .01$; SDT - $F(6, 212) = 5.57, p < .01$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

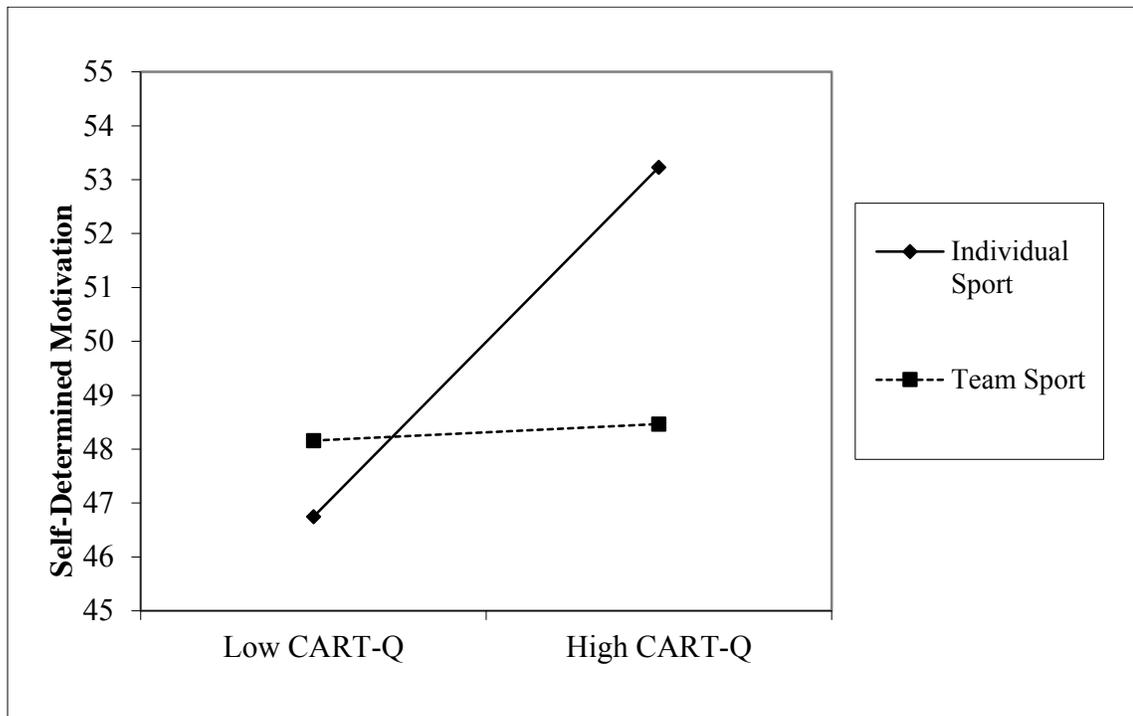


Figure 3. Interaction between Cohesion with Coach and Self-Determined Motivation using Sport Type as the moderator.

Chapter 5

Discussion

This study examined the impact of collegiate athletes' perceived cohesion with coaches and teammates on their motivation to perform, in particular, their intrinsic and self-determined motivational levels. Furthermore, as it was acknowledged that several factors might impact this relationship, this study examined if three particular factors, athletic identity, sex, and sport type, moderated the relationship between cohesion and motivation.

In athletics, there is an assumption that cohesion within the sport environment has a positive impact on athletes' motivational levels and ultimately on performance. Cohesion has been assessed and linked to various athletic factors, such as intrinsic motivation (Amorose & Horn, 2001; Gagné et al., 2003; Hollebeak & Amorose, 2005), motivational orientation (Amorose & Anderson-Butcher, 2007), self-determined motivation (Gillet et al., 2010; Riley & Smith, 2011), and athletic performance (Carron et al., 2002; Mullen & Copper, 1994), though it has not been defined as the perception that athletes have of their sense of cohesion with their coaches and teams. The focus on the student-athletes' perceptions is congruent with organizational or vocational person-environment (P-E) fit theories that assume that individuals' perceived congruence (or fit) with their working environments leads to greater satisfaction, commitment, and performance (Dawis & Lofquist, 1984; Juntunen & Even, 2012). Based on P-E fit theories and the current cohesion literature, it was expected that general cohesion within the sport environment would positively predict motivational levels. Therefore, hypothesis 1 stated that the sense of cohesion athletes perceive with their coach and team

would positively predict motivational levels. This hypothesis was supported by the results.

Athletes' perceived cohesion with their coach and with their team were significant contributors to the explained variance in the first step of the regression models, for both intrinsic and self-determined motivation. As both were significant contributors, this finding suggests that this perceived cohesion, both with coach and team, is important in aiding and maintaining high levels of intrinsic and self-determined motivation.

Furthermore, these results imply that individual athletes' perceptions of cohesion are important in influencing motivation, and must be considered in addition to specific coaching behaviors (Amorose & Horn, 2001) or the level of coach involvement (Gagné et al., 2003). Although the current study did not examine the relative contribution of perceived cohesion versus coaching behaviors in predicting motivation, the finding adds to the current literature in that it suggests the possibility that an individualized approach to developing and experiencing cohesion may be as or more beneficial than identifying an "ideal" coaching style or set of behaviors assumed to work for all athletes.

The remaining hypotheses addressed the potential moderating effects on the relationship between perceived team and coach cohesion and motivation to perform. Hypothesis 2 stated that athletic identity would moderate the relationship between cohesion and motivation level in such a way that the relationships between cohesion and motivation will be stronger for athletes who express lower levels of athletic identity. In other words, athletes who express a high sense of athletic identity may not need cohesion with their coach or team in order to be motivated to perform. Consistent with current literature, athletic identity was found to have a significant main effect on intrinsic and

self-determined motivation (Anderson, 2004; Faye & Sharpe, 2008; Warriner & Lavallee, 2008). Thus, student-athletes who reported having a higher athletic identity also reported higher intrinsic and self-determined motivation to perform in their sport.

The current study examined the moderating effect by entering the two interaction terms with athletic identity (i.e., cohesion with team x athletic identity and cohesion with coach x athletic identity) in two separate steps with cohesion with team x athletic identity being entered first. The cohesion with team x athletic identity interaction term explained a significant amount of the variance while the cohesion with coach x athletic identity interaction term did not. This indicates that the degree to which an individual identifies with the athlete role moderated the relationship between cohesion with team and both intrinsic and self-determined motivation. Specifically, individuals with low athletic identity reported higher levels of intrinsic and self-determined motivation when they also perceived high levels of cohesion with team. Conversely, athletic identity did not moderate the effect of perceived cohesion with coach on intrinsic or self-determined motivation.

Studies investigating the impact of athletic identity identify the necessity of higher levels of athletic identity (Faye & Sharpe, 2008; Mallett & Hanrahan, 2004) as well as the protective factors of developing a solidified athletic identity within elite sport (Warriner & Lavallee, 2008). This finding suggests that, while developing cohesion within the team and the coach-athlete relationship may be useful in generating motivation in athletes, developing the sense of team cohesion may be particularly important in motivating those athletes who have less self-identity as an athlete. For those high-team cohesion/lower athletic identity individuals, winning as a team, working to showcase the

talents of teammates, or the enjoyment of the collective success may be motivating factors.

Hypothesis 3 stated that sex would moderate the relationship between cohesion and motivational level such that the relationships between cohesion with team and coach and motivational level will be stronger for women than for men. Contrary to the current literature, which indicates the importance of relationships for women (Carron et al., 2002; Flood & Hellstedt, 1991; Hollembeak & Amorose, 2005; Norman & French, 2013; Sheldon & Watson, 2011), this study did not find sex to have any significant impact on intrinsic or self-determined motivation nor did it moderate the relationship between cohesion and motivation. This finding could be the result of female student-athletes more heavily identifying with the athlete role, a traditionally more masculine role, and therefore reducing any additional gender socialized importance of building relationships. It is also a possibility that the women in this study have developed relationships outside of sports and did not feel the need to have sports satisfy their relationship needs so their sense of cohesion with coach and team was no more important to them than it was for the male athletes.

Based on the current literature that identified personality differences between individual and team sport athletes (Rhind et al., 2012; Schurr et al., 1977), it was expected that the addition of sport type would moderate the relationship between perceived cohesion and motivation. As such, hypotheses 4 and 5 both addressed sport type as a moderator. Hypothesis 4 stated that type of sport would moderate the relationship between cohesion and motivational level such that the relationship between cohesion with team and motivational level will be stronger for athletes who are involved

in a team sport. Conversely, hypothesis 5 asserted that type of sport would moderate the relationship between cohesion and motivational level such that the relationship between cohesion with coach and motivational level will be stronger for athletes who are involved in an individual sport. In other words, perceived cohesion with team would be more influential on the motivation of team sport athletes whereas perceived cohesion with coach would be more influential on the motivation of individual sport athletes.

Interestingly, the results of this study provided support for hypothesis 5 but not for hypothesis 4. A significant interaction between perceived cohesion with coach and sport type when using self-determined motivation as the dependent variable was found. This result indicates that for individual sport athletes, the more individuals perceive cohesion with coach, the higher their reported self-determined motivation. This finding extends the results of the study conducted by Hollembeak and Amorose (2005), which found athletes differ on levels of intrinsic motivation depending upon their sport type. In contrast, the current study found sport type to be a significant moderator of the cohesion – self-determined motivation relationship. Furthermore, the current study highlights the need to understand how individual sport athletes perceive their level of cohesion with their coach and to find ways to improve that perceived sense of cohesion.

Halbrook et al. (2012) found sport type to be a significant predictor of group cohesion factors, such that team sport athletes reported higher levels of cohesion than individual sport athletes. Based on that study, it was expected that playing in a team sport would also influence the relationship between group cohesion and motivation. However, this study did not find that to be true. This finding may have been influenced by the type of team sport athletes that participated in the study. Baseball and softball

were the predominant team sports represented and these teams often carry larger rosters than other team sports such as basketball or rowing. Perhaps players on these larger teams were cohesive with some members of the team, but knew others less well. Additionally, it is possible that some team sports require more interaction, and therefore more cohesion, than the sports represented in the current study.

Clinical Implications

The results of this study can be helpful for coaches and mental health professionals working with student-athletes and collegiate sport teams in several ways. First, as suggested by P-E fit approaches, enhancing cohesion within the team and the coach-athlete relationship may aid in increasing an athlete's intrinsic and self-determined motivation. It is important to spend time fostering both of these relationships with collegiate student-athletes. As this study examined cohesion in terms of an athlete's perceptions rather than specific behaviors, coaches and mental health professionals may benefit by allowing student-athletes to express their perceptions of cohesion with the team and with the coach and examine what behaviors or interactions might enhance or decrease that perceived cohesion. Perceptions may differ among athletes and understanding each individual athlete's perception may allow the coach to adjust his or her style of interaction (to the extent it is possible) with that particular athlete in order to meet the needs of each individual athlete, particularly within the coach-athlete relationship.

Second, as athletic identity was a significant moderator in the relationship between cohesion and motivation, it may be an important component to assess for during recruiting and when a new coach joins an existing team. By understanding the degree to

which an individual identifies with the athlete role, the mental health professional and coach may learn how important the sense of cohesion with team may be for that particular athlete. Furthermore, the approach a coach uses to connect with athletes may differ depending on the strength of their athletic identity. This additional understanding may lead to a better relationship between the coach and athlete as well, which would further increase the athlete's motivation.

Finally, this study has implications for working with athletes from different sport types. When working with individual sport athletes and teams, mental health professionals should focus on the relationship between the coach and each athlete, as this is more predictive of self-determined motivation than is the perceived cohesion with other athletes on the team. It may benefit mental health professionals and sport consultants to assess the perceived cohesion within the coach-athlete relationship at several points throughout the season and provide opportunities for this relationship to develop and meet the needs of the athlete. As the athletes' perceptions of cohesion with coaches may differ from the coaches' perceptions of that cohesion, coaches may profit from understanding how the athletes perceive their relationship with coaches.

Directions for Future Research

Though the present study extends the understanding of the relationship between cohesion and motivation in collegiate student-athletes and the factors that impact this relationship, a full understanding of the athlete's person-environment fit and motivation remains unclear due to the complexity of this relationship. As such, future research may expand upon the current project through an array of relevant avenues.

As this study examined three moderators of interest (i.e., athletic identity, sex, and sport type), future research may add to the understanding of this relationship by exploring other potential moderators such as parental support for athletic involvement, future goals of the athletes, or the international student status of athletes. Though no major differences were found within the small subset of international students within this study, it may be of interest to examine further the differences between international student-athletes and domestic student-athletes on the relationship between cohesion and motivation. Do international students rely on the team as their primary social support system or do they connect with other international students, regardless of whether they are student-athletes? Furthermore, as sports continue to grow and change with the ever-increasing media presence, there may be other factors that researchers will wish to examine as potential moderators in this relationship.

Though no significant interactions were found for sex, researchers may choose to further explore the influence of this factor. Previous literature has shown that female athletes often have the unique experience of building relationships with both male and female coaches (Norman & French, 2013). As the current study did not assess for the congruence of gender within the coach-athlete relationship, this would be an avenue for further exploration.

One important limitation to the current study was the heavy representation of baseball and softball in the team sport athletes (baseball, 42.5%; softball, 19.2%). Samples with a more equitable distribution among the sports represented in the NCAA may yield different results and provide a more comprehensive understanding of the relationship between cohesion and motivation in various sports. Additionally, as the

sample for this study had a disproportionate amount of team sport athletes, recruiting more individual sport athletes may be of particular interest to further examine the influence of sport type as a moderator.

Further refinement of the instruments utilized in this study may yield more accurate results and ultimately a better understanding of the intricacies of the complex relationship between cohesion and motivation. The original Sport Measurement Scale received criticism for its inability to differentiate among the various categories of motivation (Mallett et al., 2007; Pelletier, Vallerand, & Sarrazin, 2007) leading to the creation of the revised version, Sport Motivation Scale-II, that was used in this study. As this revised scale was created in 2013, continued research on its psychometric properties would be useful. Additionally, researchers continue to discuss what is the best operationalization of intrinsic motivation for elite level athletes (i.e., solely intrinsic motivation or self-determined motivation) (Hollembek & Amorose, 2005; Pelletier et al., 1995; Treasure et al., 2007). This study found quite similar results when using the intrinsic motivation or self-determined motivation scales; however, there were some differences. Future research should aim to expand upon the assessment approaches as well as determine whether intrinsic motivation by itself or the composite self-determined motivation is a more appropriate measure of the motivation experienced by collegiate student-athletes.

Finally, the Coach-Athlete Relationship Questionnaire that was implemented in this study assessed the athletes' perceptions of their relationship with the coach. While this is an important component of the coach-athlete relationship, it is also important to understand and assess the athletes' perception of their coach's perception of the athlete.

In other words, understanding whether the athlete respects the coach provides useful information, though more information would be gleaned by assessing if the athlete believes that the coach respects the athlete. This “meta-perception” would generate a more complete understanding of the athlete’s perception of the coach-athlete relationship and ultimately how this relationship impacts the athlete’s motivation. Future research should assess for this “meta-perception” and its influence on athletes’ motivation.

Limitations

As with all research, this study is not without limitations. One such limitation is the diversity, and therefore generalizability, of the sample. Though the study was available to all current collegiate student-athletes in the United States, the sample is not representative of all sports played within the NCAA. As noted earlier, there were significantly more participant responses from team sport athletes than individual sport athletes. The majority of participants were Caucasian, and the majority of male team sport athletes identified as participating in baseball. The characteristics of the current sample obviously limit how much the results can be generalized to all NCAA athletes.

Additionally, the instruments used in this study were self-report in nature. Although the results were collected anonymously to preserve the integrity of the instruments, there is no way to ascertain how truthful the participants were in giving responses. Social desirability or the need to provide answers that aligned with their presentation as a student-athlete may have impacted the quality of responses.

Conclusion

Using a P-E fit framework, this study added to the current literature addressing the influence of cohesion on sport performance through the investigation of the

relationship between perceived cohesion with coach and with team and the intermediate outcome of motivation in sport. Both forms of perceived cohesion were important to student-athletes' motivation to perform.

Furthermore, this study explored the complexity of this relationship by examining three potential moderators: athletic identity, sex, and sport type. Athletic identity was found to be a significant moderator in the relationship between cohesion with team and both intrinsic and self-determined motivation, suggesting it is an important factor to consider when working to increase student-athletes' intrinsic and self-determined motivation. Though previous research has indicated the importance of relationships for female athletes, the results of this study found no moderating effect for sex of the athlete. The significant finding that perceived cohesion with their coaches was more predictive of motivation for individual sport athletes than for team sport athletes highlights the differences between individual sport and team sport athletes. Collectively, these findings emphasize the need for continued research to fully understand the complex relationship between cohesion and motivation, as well as the group differences between athletes (i.e., individual sport and team sport). There are implications for coaches and mental health professionals alike to address the various factors involved in moderating the cohesion – motivation relationship.

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Appendix A

Demographic Questionnaire

Please answer the following questions.

1. What is your age?
2. Please specify your sex.
 - a. Male
 - b. Female
3. Which of the following best describes your ethnicity?
 - a. Caucasian/White
 - b. African American/Black
 - c. Asian American/Pacific Islander
 - d. Latino American/Hispanic American
 - e. Native American/American Indian
 - f. Biracial/multiracial
 - g. Other, please specify
4. Are you an international student-athlete?
5. What is your current NCAA sport? If you play two NCAA sports please select the one you identify with more strongly.
 - a. Drop down box provided with all NCAA sports
6. What NCAA Division level do you play in?
 - a. Division I
 - b. Division II
 - c. Division III

- d. Unsure
7. Do you have an athletic scholarship?
 - a. Yes, full athletic scholarship
 - b. Yes, partial athletic scholarship
 - c. No athletic scholarship
 8. How many seasons have you spent with your current head coach?
 9. How many seasons have you spent with your current team?
 10. How many years have you spent playing your sport?
 11. Are you currently in or out of season?

Appendix B

Coach-Athlete Relationship Questionnaire (CART-Q)

(Jowett & Ntoumanis, 2004)

For the following prompts, please indicate the number that best reflects the extent to which you agree or disagree with each statement regarding your relationship with your current coach.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

- | | | | | | | | | |
|------------|----------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|
| 1. | I feel close to my coach. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | I feel committed to my coach. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I feel that my sport career is promising with my coach. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | I like my coach. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | I trust my coach. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | I respect my coach. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | I feel appreciation for the sacrifices my coach has experienced in order to improve his/her performance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | When I am coached by my coach, I feel at ease. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | When I am coached by my coach, I feel responsive to his/her efforts. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | When I am coached by my coach, I am ready to do my best. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | When I am coached by my coach, I adopt a friendly stance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix C

Group Environment Questionnaire (GEQ)

(Carron et al., 1985)

This questionnaire is designed to assess your perceptions of your team. There are no wrong or right answers, so please give your immediate reaction. Some of the questions may seem repetitive, but please answer ALL questions.

The following statements are designed to assess your feelings about YOUR PERSONAL INVOLVMENT with this team. Please indicate a number from 1 to 9 to indicate your level of agreement with each of these statements.

1	2	3	4	5	6	7	8	9	
Strongly									Strongly
Disagree									Agree

1. I do not enjoy being a part of the social activities of this team.
2. I'm not happy with the amount of playing time I get.
3. I am not going to miss the members of this team when the season ends.
4. I'm unhappy with my team's level of desire to win.
5. Some of my best friends are on this team.
6. This team does not give me enough opportunities to improve my personal performance.
7. I enjoy other parties rather than team parties.
8. I do not like the style of play on this team.
9. For me, this team is one of the most important social groups to which I belong.

The following statements are designed to assess your perceptions of YOUR TEAM AS A WHOLE. Please indicate a number from 1 to 9 to indicate your level of agreement with each of these statements.

1	2	3	4	5	6	7	8	9	
Strongly									Strongly
Disagree									Agree

10. Our team is united in trying to reach its goals for performance.
11. Members of our team would rather go out on their own than get together as a team.
12. We all take responsibility for any loss or poor performance by our team.
13. Our team members rarely party together.
14. Our team members have conflicting aspirations for the team's performance.
15. Our team would like to spend time together in the off season.
16. If members of our team have problems in practice, everyone wants to help them so we can get back together again.
17. Members of our team do not stick together outside of practice and games.
18. Our team members do not communicate freely about each athlete's responsibilities during competition or practice.

Appendix D

Athletic Identity Measurement Scale (AIMS)

(Brewer et al., 1993)

Please indicate the selection that best reflects the extent to which you agree or disagree with each statement regarding your sport participation.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

- | | | | | | | | |
|----------------------------------------------------------------------------------------|---|---|---|---|---|---|---|
| 1. I consider myself an athlete. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I have many goals related to sport. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Most of my friends are athletes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Sport is the most important part of my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I spend more time thinking about sport than anything else. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I need to participate in sport to feel good about myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Other people see me mainly as an athlete. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. I feel bad about myself when I do poorly in sport. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Sport is the only important thing in my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. I would be very depressed if I were injured and could not compete in sport. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix E

Sport Motivation Scale-II (SMS-II)

(Pelletier et al., 2013)

Why do you practice your sport?

Please think about why you practice 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 practicing your sport.

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

- | | | | | | | | |
|----------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|
| 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 practicing 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 |

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| 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 |